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A comparative study of dementia-related service provision and configuration in Canada

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Abstract

The purpose of this study was to describe and compare the provision of
dementia-related services throughout the disease trajectory. Previously collected interview
data from family physicians, geriatric specialists, and case managers in Calgary, Edmonton,
and Ottawa (n=34) using a standardized interview schedule were quantified and
thematically categorized. The proportions of participants that identified specific services
were analyzed at each stage and cumulatively using chi-square tests; proportions of
identifiers were also examined through time using time-to-event analysis. Further,
relationships between participants and services were described using social network
analysis. The following services were analyzed: neuroimaging, depression-related,
delirium-related, future planning, informal support, Alzheimer Society and related, in-home
support, and day program services. Overall, the findings indicated variation in service
delivery among professionals and locations; family physicians and Ottawa clinicians,
particularly, may not be providing services at frequencies and times recommended in
national guidelines.

For Dr. Margo Husby, 1948-2013

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List of abbreviations

ADL=activities of daily living
CC=case manager in Calgary
CAL=Calgary
CCAC=Community Care Access Centre
CCCDTD=Canadian Consensus Conference on Diagnosis and Treatment of Dementia
CF=family physician in Calgary
CI=confidence interval
CM=case managers
CS=specialist in Calgary
CT= computerized tomography
EC=case manager in Edmonton
EDM=Edmonton
EF=family physician in Edmonton
ES=specialist in Edmonton
FP=family physician
IADL=instrumental activities of daily living
MRI=magnetic resonance imaging
OC=case manager in Ottawa
OF=family physician in Ottawa
OS=specialist in Ottawa
OTT=Ottawa
SNA=social network analysis
SP=specialists
T=time

Chapter 1: Background

1.1 Epidemiology of dementia

Dementia is a syndrome caused by a variety of brain illnesses that is typically progressive and terminal. It slowly and continually affects multiple higher cortical functions including memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgment (1). Deterioration in emotional control, behavior, and performance of daily activities commonly follow thereafter (1). The incidence of dementia increases greatly among individuals 65 years and older (2). The most common form of dementia is Alzheimer's disease, a gradual and progressive disease that contributes to approximately 60% to 70% of cases (3), and affects a greater proportion of women (4); and an increasing proportion of caregivers are male (5). Other brain illnesses that can also cause dementia include vascular dementia, frontotemporal dementia, dementia with Lewy bodies, and other rare diseases (3). In vascular dementia, the onset of symptoms can be abrupt from a heart attack or stroke, substantially limiting blood to and through the brain, or progressive from a succession of small strokes or transient ischemic attacks (1). However, the boundaries between subtypes of dementia are unclear and mixed forms of dementia, such as Alzheimer's disease in combination with vascular disease, are not uncommon (3). Reportedly, more than 55 illnesses, both progressive and non-progressive illnesses, can cause dementia (6). In addition to dementia, individuals may also have comorbidities, other chronic conditions or acute illnesses, which require additional medical treatment and support.

The prevalence of dementia is greater among older populations; however, it is not a normal part of aging and can affect younger populations as well (7). The prevalence

of seniors with dementia is increasing nationally and internationally. The World Health Organization estimated that 35.6 million people worldwide were living with dementia in 2011 (8). Each year, 7.7 million new cases of dementia are reported, approximately a new case every four seconds (8). It is projected that more than 1.1 million Canadians will have dementia in 2038 (9). Dementia is one of the major causes of disability and is the leading cause of dependency later in life (10). Dementia, further, is not only a difficult journey that affects individuals with the condition, but for their family members and friends as well. Family caregivers are at increased risk for stress, fatigue, and other significant health concerns such as depression and chronic diseases. They also have 65% greater risk of dying in comparison to non-caregivers in the same age group (11). Therefore, the inherent complexities of this cognitive disorder and the growing prevalence of dementia warrant the need for innovative research on community-based dementia services. In particular, dementia-related services require interdisciplinary and multi-agency collaboration and coordination (12), family support (13), and a variety of community-based elder care services (14).

With the appropriate support, many people with dementia can continue to engage, contribute in society, and maintain a positive quality of life (8). The United Nations called a summit on non-communicable diseases in 2011 that resulted in a political declaration acknowledging the global threat of non-communicable diseases, including mental and neurological disorders such as Alzheimer's disease, as one of the major challenges for development in the 21st century (15).

1.2 Dementia-related health and social care services

Although it is important to evaluate the effectiveness of individual service providers, complex issues such as the diagnosis, treatment, and management of people with dementia and their caregivers require a multi-organizational approach. The overall care of people with dementia and their caregivers necessitate a combination of different types of community-based health care and social services, which can be examined as a network or system of interactions for various purposes between service providers. Arguably, the quality of care and ultimately, the well-being of the patient with dementia and their caregiver, are largely determined by the coordinated and cooperative efforts of a variety of agencies (16).

In Canada, people with dementia have access to health care services from their Medicare or health insurance implemented through their provincial government. Availability of health care and social support services is unique to each community. Hence, it is difficult to ensure the continuity and coordination of dementia care due to the complexity of patient needs, knowledge gaps in the availability of support services (including formal and informal health and social support services), and lack of inter-organizational coordination (17). Currently, a national plan in Canada to improve the quality of life for patients with dementia has yet to be developed (8). A provincial plan, however, in Ontario was published in 1999 to support people with dementia and their caregivers (18). The Ontario government planned to invest $68.4 million in the strategy over 5 years; some areas of action included respite services for caregivers, advance directives on care choices, and specialized diagnosis and support. The Third Canadian Consensus Conference on Diagnosis and Treatment of Dementia (CCCDTD) (19) and the

updated diagnostic approach from the fourth conference (20) provides a series of recommendations for clinicians in treating patients with dementia throughout the disease trajectory; the recommendations range from assessment and diagnosis to the management of the disease as it progresses. Previous research has been conducted on the impacts of dementia on instrumental activities of daily living (IADL); however, the types of national and local services provided for each stage of dementia and its progression has not been thoroughly investigated. Considering all aspects of the dementia trajectory may provide insight for a system-wide approach to effectively use dementia-related services in Canada. Further, the effectiveness and efficiency of the Canadian health care system in caring for patients with dementia can be determined by comparing the structures and processes of dementia-related service delivery across the country.

The health and social care system is required to address the needs of people with dementia and their caregivers throughout the stages of the disease. Family physicians act as gatekeepers to the health care system (21) and their decision to pursue a diagnosis of dementia is key to accessing health and social support services (22,23). In addition to diagnosing dementia, family physicians also have responsibilities in providing education and psychological support, and mobilizing social support networks for families caring for people with dementia (24). In Canada, primary care practitioners provide the majority of dementia care and three specialties including geriatric psychiatry, geriatric medicine, and neurology provide consultation when necessary (25); hence, effective coordination between primary care and specialist care services is important for the appropriate diagnosis and management of dementia.

After the diagnosis of dementia, it is essential to coordinate the use of health and social care services, including post-diagnostic support services (e.g. future planning and maintaining independence), community services (e.g. home care and respite care to stay at home as long as possible), continuing care services (e.g. alternative living arrangements when living at home is no longer an option), and end-of-life services, to improve the quality of life for people with dementia along with their caregivers (3). Community services are not only in the interest of people with dementia and their caregivers, but also for the public, as institutional care is the largest driver of cost for dementia in high-income countries (3).

Compared to the cost of services from long-term care facilities, in-home support services are reportedly more cost-effective (26). As much as 90% of in-home care is provided by family caregivers in Canada for people with dementia (27) and challenges to the availability, delivery, and use of community services need to be addressed (23,28). Canadians with dementia report that support services (e.g. housework assistance) are primary needs and that their health care needs are not being fulfilled (29), putting more pressure on family members, other unpaid caregivers, and the use of private agencies; unfortunately, these issues are likely more prominent in rural and more remote settings (30).

People with dementia tend to depend on their family caregivers who remain in the community; hence, the needs of caregivers in addition to those of people with dementia need to be considered in the provision of dementia-related services. Frequently used services reported by caregivers include adult day programs, homemaking services, support groups, case management, in-home respite services, home health care (e.g. physiotherapy and occupational therapy), and other in-home services (e.g. meal delivery and personal

care) (31). Respite care provides support to people with dementia in the community by temporarily relieving their caregivers with other care providers, which can take place at the home of the person with dementia, various community settings, or long-term care facilities. In-home respite is a commonly used form of respite that focuses on medical and functional needs, where people with dementia are monitored by companions, home-health aides, or nurses, and provides an opportunity for caregivers to leave the house (32). In-home respite has been reported to decrease distress (33).

Adult day programs also provide supervision for people with dementia and tend to focus more on social and recreational activities such as cognitive stimulation, physical exercise, and reminiscence, which also provides respite for their caregivers (32). Regular use of adult day programs have demonstrated lower levels of care-related stress such as overload and strain (34). Other services to support people in the community include instrumental assistance with housekeeping, cooking, shopping, transportation, and personal care.

1.3 Social network analysis

Social network analysis (SNA) can be used to identify and compare community resources provided by health care professionals, which can help understand the differences in the availability of services across communities and the level of inter-organizational coordination of dementia care. It is the study of social relationships, social structure, and its consequences (35), which is based on the fundamental concept that the social structure where a network is embedded is primarily responsible for determining behavior and patterns of thought of members in the network (36). Further, it is the analysis of relationship arrangements based on exchanges of resources between members of social

systems (35). Social networks can be defined as a structure composed of a set of individuals or collectivities with a set of one or more relationships between a select number of members (37), which can be interpreted as a whole to understand social behavior of individual members involved (38).

SNA is a quantitative method and the way it is used is determined by the research question for describing, representing, and measuring network data (37). It is a tool that examines characteristics of pairs of individuals, i.e. type of relationships between individuals. This information can be used to create maps and typologies of social structures (39), represented as networks with sets of nodes and ties. Nodes represent members of a social structure (e.g. individual people, corporations, households, nation-states, or other collectivities) and ties represent the relationships between them (e.g. flows of resources, friendships, transfers, or other relationships) (35). Relationships, which are typically asymmetrical (i.e. the unequal exchange of resources between members of a relationship), arguably determine the allocation of scarce resources (e.g. who has access to what) and these relationships ultimately develop into complex and hierarchical networks that have important implications for competition, power, and dependency (35).

There are 5 basic elements of the SNA methodology (40): 1) the understanding that there are structural constraints on any particular activity of interest and these constraints are the basis of interpreting behavior; 2) a focus on examining relationships (i.e. dyadic relationships, the basic relational unit of analysis between two individuals at a time) between members rather than individualistic categories; 3) an assumption that social relationships with multiple members of a network influence individual behavior; 4) the belief that the world is made up of networks rather than groups; and 5) an assumption that

methods studying relationships supplement and can arguably replace methods studying

individual characteristics (e.g. age and gender).

SNA has been used in many areas of study (41) and can be used to investigate

the way in which relationships among people and organizations impact population health

and wellness. The World Health Organization recognizes social networks as a social

determinant of health and disease (42); the degree to which individuals among a

community are integrated and interconnected is a key determinant of health, well-being,

and vitality that applies from a single individual to entire populations (36). For over four

decades, social networks have been used in health-related research to understand a variety

of health topics including illness, distress, disease, and disability (43). Studies have

suggested that the size of social networks alone are associated with mortality and various

morbidities, for example, ischemic heart disease, cancer, and cerebrovascular and

circulatory disease (44). Lower density networks and multidimensional friendships, for

example, can be associated with better support and mental health (45) and weak linkages

between groups in networks can act as important bridges that provide the only path for

information, influence, mobility, and community organization (46).

SNA has a strong tradition of investigating inter-organizational network

patterns of health care delivery (e.g. clinical and supportive services) such as referral

patterns, service coordination, collaboration, fragmentation, and integration (47–49). For

example, integration is the extent of interconnectedness and resource exchange patterns

among organizations, which tend to improve service delivery outcomes (49). Inter-

organizational collaboration and other forms of network development depend on reciprocal

exchange, complementary activities, and trust between organizations to meet the desired

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outcomes (50), such as overcoming resource deficiencies, decrease environmental uncertainty, and gain influence (16).

SNA can provide information on which organizations are connected to each other and for which issues. Influential or prominent organizations (i.e. central actors) in a system can be determined by a network measure referred to as centrality, which is determined by relationships between different organizations or service delivery agencies (47). Networking, for example, creates relationships between service delivery agencies that increases social capacity and reduces fragmentation issues (51), which is particularly advantageous for the purposes of public health emergencies (47). SNA has also been used to evaluate a variety of areas that affect population health including community resources (52), effectiveness of dementia care networks (53), and community capacity for provision of chronic disease services (54).

To my knowledge, this study is the first to use SNA to investigate dementia-related care services throughout the entire disease trajectory. In this study, the relationships between participating health care professionals and dementia-related care services that they identify were examined.

1.4 Purpose and research questions

To understand dementia-related services that are currently used, health care professionals in three major urban Canadian centers working with dementia patients were interviewed about their actions and patterns of resource use throughout the disease trajectory. The purpose of this study was to analyze, interpret, and determine the configuration of service availability and processes of dementia-related care in Calgary (AB), Edmonton (AB), and Ottawa (ON), using previously collected interview data from the

Dementia-NET research team. This study is part of a Canadian research program based on a cohort of dementia patients and caregivers in Calgary, Edmonton, and Ottawa. The program aims at assessing the effectiveness and efficiency of care in facilitating the overall well-being of people with dementia and their caregivers across the disease trajectory.

The research questions for this study are as follows.

1. What are the types of dementia-related services available and provided for people with dementia and their caregivers by family physicians, geriatric specialists or geriatric psychiatrics, and dementia case managers or home care coordinators in Calgary, Edmonton, and Ottawa?

2. What are the similarities and differences in dementia-related service provision in the three professions, and what are they in the three centers for different stages of the health condition?

3. What changes in service provision are indicated by variations in the data, explored descriptively, between professions and by centers through time?

Chapter 2: Methods

The following description of research methods involves two phases. The first phase consisted of the acquisition of the data, which was collected by the Dementia-NET research team (55). The second, larger, phase was the validation and analysis of the data, which was conducted by the author and forms the substance of this thesis. Data analysis involved quantitative content analysis and thematic categorization of dementia-related services. Quantitative and statistical analysis consisted of chi-square tests, SNA, and time-to-event analysis for a select number of service categorizations to explore and compare dementia-related service provision patterns through time and across professionals and locations.

2.1 Study design, sample size, and data collection procedure

This was a pilot cross-sectional descriptive survey. It was aimed at describing the patterns of service use, which was specific to dementia care and in relation to the type of health care profession, place, and time. Data were collected during structured interviews employing a standardized interview schedule (see section 2.3 for details). The interview schedule is based on a dementia case vignette, hereby referred to as the 'vignette'. Three research coordinators in Calgary, Edmonton, and Ottawa explored and developed local recruitment strategies to recruit study participants. The recruitment strategy involved health care personnel directories that were local and publically available. Recruitment aimed at including a diversity of organizational contexts. In the Calgary site, for example, geriatric specialists were recruited from the Rockyview General Hospital's Seniors Health clinic, home care coordinators were recruited from Home Care, and family physicians were recruited from various medical clinics in Calgary. The recruitment strategy in Calgary also

involved contacting research family physicians and geriatric specialists for referrals of potential study participants to recruit and seek more study participants. Eligibility for participation in the study included being a family physician, specialist geriatrician, geriatric psychiatrist, dementia case manager, home care coordinator, or Community Care Access Centre (CCAC) case manager (in Ottawa). Further, eligible participants needed to be in practice in their respective fields for at least 1 year, in their respective sites for at least 1 year, English or French speaking, and provided their written or verbal consent to participating in the study. The research coordinators mailed or faxed a letter of invitation to health care professionals who met the eligibility criteria and invited those individuals to participate in the study. The study aimed to recruit 4 family physicians, 4 home care coordinators (or CCAC case managers in Ottawa), and 4 specialist geriatricians or geriatric psychiatrists from each location. These professionals were desirable for the study, as family physicians generally are the first to see patients with dementia and can adequately assess and manage most patients with dementia (19), case managers and home care coordinators (many with backgrounds in social work, occupational therapy, and nursing) are expected to be familiar with the variety of dementia-related care services available (56), and specialist geriatricians or geriatric psychiatrists treat more severe or complicated cases of patients with dementia (19).

In this study, the interview data were intended for descriptive qualitative analysis using care maps. In qualitative research, sample size is ultimately based on judgment and experience (57), the purpose of the sources of information, and the research question. Previous experience from the investigators in qualitative research suggested that 12 participants per site would provide a valid level of saturation. In terms of professional

type, the researchers also considered that 4 participants of each professional type per site were appropriate to explore the similarities and differences in service provision indicated in response to the vignette. Samples of the participants were assembled purposively by the research coordinators in each site and approved by the investigators.

A total of 34 health care professionals (31 English and 3 French speaking respondents), 94.4% of the total expected number of participants, participated in the study and were interviewed to determine their responses and actions for the hypothetical patient with dementia and her caregiver at each time point in the vignette. Considering site and profession, a total of 9 unique types of respondents were included in the study. The data were collected between January and April 2009. A summary of the respondent types and the number of participants per site are provided in Table 1. Dementia case managers, home care coordinators, and CCAC case managers will hereby be referred to as 'case managers'. Specialist geriatricians and geriatric psychiatrists will hereby be referred to as 'specialists'.

Table 1: Number of participants, by type of profession and site

Profession	Site	Number of participants
Dementia case managers or homecare coordinators	Calgary	4
Dementia case managers or homecare coordinators	Edmonton	4
CCAC case manager	Ottawa	1
Number of case managers		*9*
Family physicians	Calgary	4
Family physicians	Edmonton	4
Family physicians	Ottawa	4
Number of family physicians		*12*
Specialist geriatricians or geriatric psychiatrists	Calgary	4
Specialist geriatricians or geriatric psychiatrists	Edmonton	4
Specialist geriatricians or geriatric psychiatrists	Ottawa	5
Number of geriatric specialists		*13*
Total number of participants		**34**

Three research coordinators conducted individual face-to-face or telephone interviews with respondents located in each of their respective sites. The participants were sent a copy of the vignette (see appendix A) at least 1 week in advance of their interview. Participants were asked to reflect on the case, stage by stage, as though the person with dementia presented in the vignette and her caregiver were local residents. The participants were asked to describe what actions they would take in response to the events portrayed in the vignette, and what services they would expect to be provided by other professionals and agencies.

The interviewer audibly read the patient history and the description of the vignette at each time point. After this, the interviewer would pose the following 2 questions: 1) 'What action would you take if she presented to you at this stage with this history?' and 2) 'Are there any other resources you would consider at this stage?' Interviewers were permitted to ask follow-up questions for clarification.

All interviews were recorded and summarized, and interviews in French were translated to English. The data involved the audio recordings of the interviews, transcriptions, and summary transcriptions. The summary transcripts listed quotations of unique and common identifications of particular actions and resources at each time point and indicated the number of participants corresponding to the responses (i.e. a count of the observations by site and profession). The author validated a sample of the summary transcriptions for accuracy, context, and completeness. This was achieved by listening to the recordings while reviewing the summaries and clarifying the text where necessary.

2.2 Ethics approval

The University of Calgary Conjoint Health Research Ethics Board reviewed and approved this study (ethics identification number: E-22186). Prior to the interview, respondents were provided with a copy of the consent form. No personal or health information was collected from the participants during the interview; only their opinions and potential actions regarding the vignette were collected. Respondents consented to participating in the study either by signing the consent form or by providing their verbal consent recorded during the interview. All participants were made aware that the interview was recorded. Respondents were offered $50 to $75 as reimbursement for out-of-pocket expenses relating to participating in the interview, lasting approximately 30 minutes.

2.3 Interview schedule

The structured interviews in this study used a standardized interview schedule with a fixed set of questions. The interview schedule was adapted from a hypothetical dementia case vignette, which was created in 2006 by Dr. William Dalziel with support from a working group from the Champlain Dementia Network in Ontario (58). The

working group reviewed the vignette and supported the decision-making process for items to be included or excluded. This working group involved clinical expertise, research experience, and patient representation, which included a family member of a person with dementia and representatives from the CCAC, the Geriatric Psychiatry Community Services of Ottawa, and the Alzheimer Society. Modifications, such as the omission of clinical and policy recommendations, were made to this original vignette by the Dementia-NET research team for the purposes of transferring it into an interview format.

The vignette identifies a 76-year-old woman named 'Mrs. GC' who develops mixed Alzheimer's and vascular dementia. It also identifies her husband as the main family caregiver, but the primary focus of the vignette was Mrs. GC. The vignette presented 13 time points, over an approximate 8-year period, coupled with a brief description of the patient and caregiver status (with varying lengths of time in between to reflect a more realistic progression of the disease). Key stages of the case involved mild cognitive impairment, mild, moderate, and severe stages of dementia, palliative and end-of-life care, and periods of transition in care needs. Levels of memory loss, functional loss, behavior issues, and need for informal and formal services were briefly identified for each stage of the disease trajectory. Further, service areas of interest were specifically outlined for family physicians. For the purposes of the data collection phase, examples of service or program names, and clinical and policy recommendations were omitted from the interview schedule.

2.4 Data quantification using content analysis

Content analysis is a process of coding data into predetermined categories and can be used to analyze information such as transcripts of structured interviews (59). This method of analysis is considered to be transparent and systematic, which however, also

requires an element of interpretation and subjectivity. The data were analyzed according to the stages of dementia portrayed in the vignette and the content of the responses (type of service, type of professional undertaking it, type of agency providing the service, purpose of service, and timing of service). Two main components of the content analysis involved creating a coding schedule and designing a coding manual (see Appendix B), which aimed to provide a broad categorization of dementia-related services with an exhaustive list of all actions and agencies identified. The coding schedule is a form for data entry of actions and services identified at each of the time points in the vignette, which collects information on the respondents and allows actions and services identified to be documented for each of the following categories: medical evaluation and other assessments; actions for the management of medications; types of programs; program names; areas of basic ADL and IADL support; other types of advice or actions; and types of health care professionals.

The development of categories and codes was an iterative process that involved two research assistants (including the author); codes were identified, added, and modified as needed until no changes were necessary. The categories were designed to encapsulate a broad range of 'identifications' of actions and services.

Identifications indicate the respondent's awareness of a form of dementia-related service provision of care, regardless of the level of specificity in the identification (e.g. from a broad identification of a type of service such as 'meal preparation services' to a specific name of a service such as 'Meals on Wheels'). Identifications in this study were indicative that the respondent was at least aware and likely expected the availability of the dementia-related care service that he or she identified under the existing circumstances when the interview took place. Hence, the assumption cannot be made that the respondents

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knew with certainty that the services identified were available or that they would have actually provided this information to their client in their clinical practice at the specified time point; however, identifications nevertheless are an indication that the respondent considers the identified service to be an available and appropriate support service at the specified point in time.

The coding manual provides a list of identifications associated with each category, which are identified numerically. Two research assistants reviewed the transcripts, and identified actions and services according to the coding manual and entered the data into the coding schedule. The data were dichotomized (identified=1, not identified=0) and entered into an electronic spreadsheet. Further, data analysis involved the development of an overview of dementia-related services derived from the 'seven stage model for planning dementia services' (3), followed by quantitative analysis including chi-square tests (or Fisher's exact test as appropriate), time-to-event analysis, and SNA using STATA 11 (60) and R (61).

2.5 Overview of dementia-related services

An overview of dementia-related services was created to address the first research question (related to the types of services, p. 10). Services were identified from the interview data and thematically categorized into 'service types' to provide a comprehensive summary of services available throughout the vignette. The process of developing these service types started with an existing model, the 'Seven Stage Model for Planning Dementia Services' from Alzheimer's Disease International (3), see figure 1.

Figure 1. The Alzheimer's Disease International 'Seven Stage Model for Planning Dementia Services' (3)

Co-ordination and care management

Pre-diagnosis | Diagnosis | Post-diagnostic support | Community services | Continuing care | End-of-life palliative care
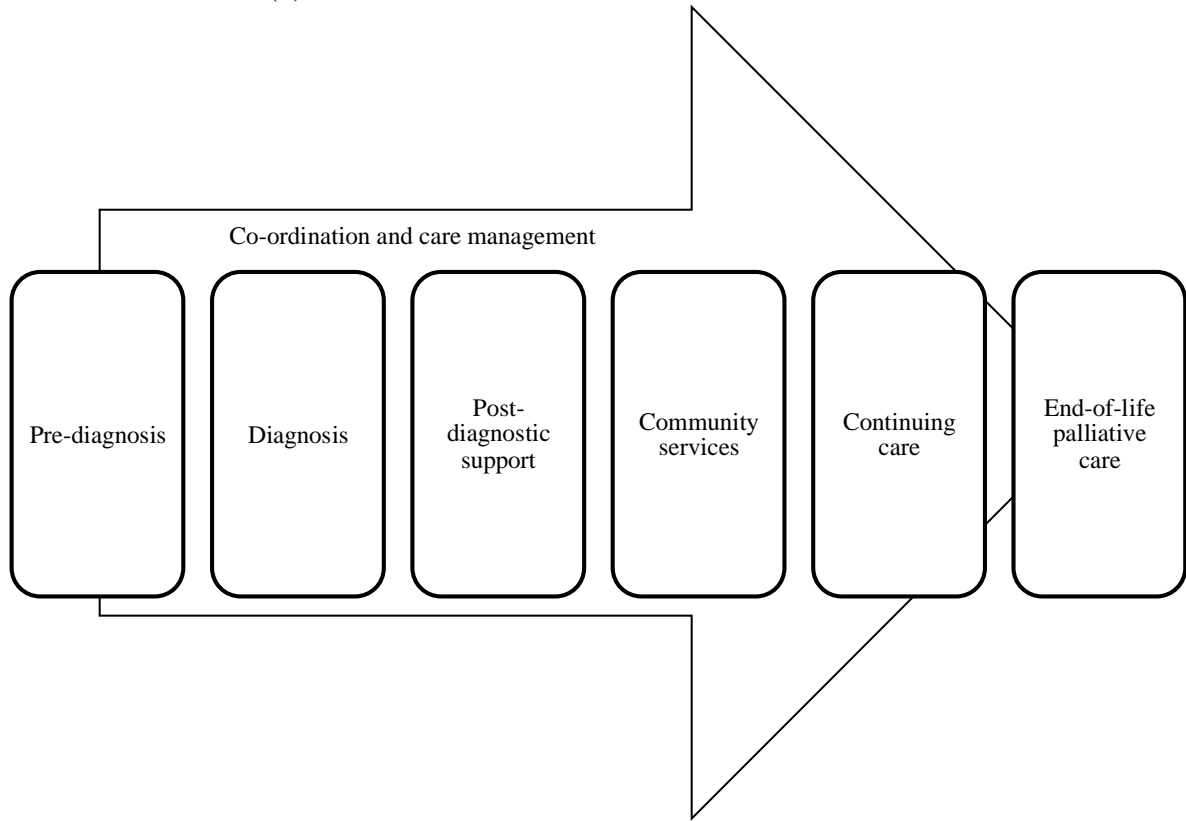
However, this model did not appropriately apply to the actual types of services reported by health care providers in the study. In particular, the dimension of time in the model was linear, with 7 discrete 'stages' For example, services were organized specifically around the timing of diagnosis, i.e. pre-diagnosis, diagnosis, and post-diagnostic support. This was limiting for the purposes of this study, because timing was a key variable of service provision being investigated in this study. Further, the 'community services' stage was too broad and the data allowed for more detailed community service types to be developed, e.g. home care and respite services. Hence, a revised version of the model, as displayed in figure 2, was developed through a process of re-categorization to clearly reflect the identified services regardless of time. The revised model aims to not restrict the

identification of service types to particular stages in the disease trajectory, i.e. services were
not organized based on the expected stage of service provision. Further, the services were
differentiated between those that catered to patients living at home or not. The services
were also categorized by their general function rather than by the service recipient (i.e. the
patient and their family caregiver was treated as a single unit of analysis). Finally, the
model was designed to accommodate comprehensive and multi-functional service providers
that span more than one service type.

Figure 2. Overview of dementia-related care services, service types
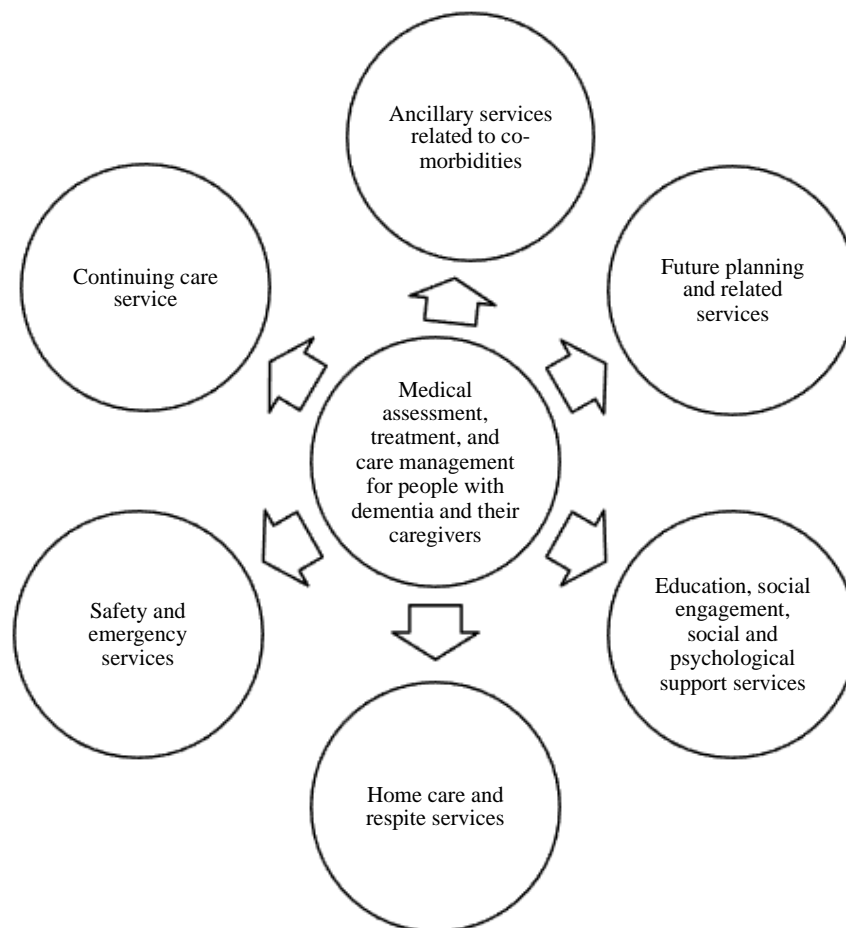
2.6 A closer look at dementia-related service provision

Specific examples of the 'service types' (introduced above, section 2.5), referred to as dementia-related 'service categories', were selected according to the clarity and availability of data relating to them (i.e. the level of detail retrieved from transcripts) and their applicability to the CCCDTD (19). These specific service categories were selected for the purposes of comparison across professions and sites, which aim to address the second research question (p. 10). Three clinical experts, one from each of the study sites, reviewed the coding manual and the identifications included in each of the service categories to ensure that they were appropriate, relevant, and comprehensive. The corresponding quotations for each of the service categories were identified, which specified the respondent type, by site and profession, and the time point identified in the vignette. Inclusion of the actions and services identified were reviewed in the context of the time identified in the vignette. Clinical experts from each site were consulted in the event of uncertainty for inclusion or exclusion of actions and services.

2.7 Chi-square tests and pairwise comparisons

Chi-square tests (or Fisher's exact tests where appropriate) and pairwise comparisons were considered to be the most appropriate methods to address one aspect of the second research question (p. 10), that is, comparing the dichotomized data describing service choices across sites and professions separately at specific points in time and cumulatively. Chi-square tests were conducted by site (Calgary, Edmonton, and Ottawa) and by profession (family physicians, specialists, or case managers) on 2 by 3 tables (2 categories for identifications: no identification or at least one identification of a particular dementia-related service category per respondent; and 3 categories of sites or 3 categories

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of professions). Chi-square tests were conducted 1) at each time point on the identifications

at that specific point and 2) on the cumulative outcome at each time point (all

identifications up to that point).

A significance level alpha of 0.05 was used for all statistical tests. Ninety-five

percent confidence intervals were calculated for pairwise comparisons of proportions when

the chi-square test indicated statistically significant differences. The chi-square test assesses

whether the percentages between groups are the same or not, and the pairwise comparison

provides a magnitude of the difference between the groups. Although it would be preferable

to stratify the respondents by site and by profession simultaneously (i.e. to compare the 9

respondent types as outlined in table 1), the sample size from each group was too small (e.g.

only 1 CCAC home care coordinator from Ottawa). An example of the chi-square tests and

pairwise test of proportions is provided in Appendix D. All tests were calculated on

STATA 11 (60).

2.8 Time-to-event analysis using the Kaplan-Meier approach

Time-to-event analysis (also known as survival analysis) was deemed to be the

best method to address another aspect of the second research question (p. 10), namely,

comparing the dichotomized data through time, across sites and professions separately. It is

a technique used to determine the length of time it takes to achieve a particular outcome of

interest (62), in this case, a dementia-related service category (as introduced in section 2.6)

being identified. Also, time-to-event analysis is important as it takes into account data that

is censored, events not reached within the follow-up of observation. In other words, not

only is it important to determine whether the outcome of interest is reached by the end of

the vignette, but also how long it takes to reach the outcome of interest. Also, time-to-event

analysis provides information on the percentage of respondents that identify a given service category at least once by specific time points when an event is expected to occur. In the vignette, the responses were followed over a fixed amount of time (13 time points). To examine the influence of different covariates (variables that may be predictive of outcomes), the dementia-related service categories were compared across the 3 study sites and the 3 types of health care professionals.

Due to the nature of the data with responses collected from each time point of the vignette (data available at exact time points), the Kaplan-Meier or the product-limit method was used to determine the survival function. This is a function of time that starts at time 0, when 100% of respondents (n=34) had not identified the outcome of interest and were 'at risk' of their first identification of the outcome of interest. Further, the survival function provides the percentage of respondents who still has yet to identify the outcome of interest at each subsequent time in the vignette.

Once a respondent identifies a relevant dementia-related service 'event', he or she remains in the group of subjects who have experienced that event for the remainder of the vignette for all subsequent time points and is no longer considered 'at risk' for that event. Hence, the events (i.e. dementia-related service categories) were considered 'absorbing events'. For example, in the instance where the observation is death, once such an event occurs, the individual is no longer alive and those who have not died by the end of the observation time have survived. Subsequent or repeating identifications by respondents were collected (and used for chi-square tests and SNA at each cross section) but were not relevant to this analysis. Further, events that had not occurred by the last time point of the study were considered to be 'right censored' (63). Right censoring typically occurs when

the event is not captured during the limited time period of a study (e.g. limited resources),

when a participant withdraws from a study, and/or when a participant is lost to follow-up.

For the purposes of this study, right censoring indicates that the outcome variable was not

identified.

The nonparametric log-rank test was also calculated in this study to test the

equality of survival functions across two or more groups (63,64). The log-rank test

compares the overall survival functions. Expected values at each event time were compared

to the observed event times. While a variety of nonparametric tests differ in how individual

comparisons are weighted at each event time, the log-rank test considers each event to be

equally important and does not weight the individual comparisons at each event time

differently. An example of the Kaplan-Meier approach for time-to-event analysis and log

rank calculations, using STATA 11 (60), is provided in Appendix C.

2.9 Social network analysis, 2-mode networks

SNA was judged to be a useful tool for addressing the second research question

(p. 10). It transforms the dichotomized data into network data to analyze the relationships

between the types of participants (by site and profession together) and the services

identified by the participants. In this pilot study, the patterns of relationships were

presented using network graphs to provide a preliminary understanding of service provision

in dementia care. SNA involves relational datasets (65), which in this study are determined

by relationships between health care professionals and community services.

There are 4 basic types of networks that can be used for a variety of health

outcomes at different times, ages, and stages (65): 1) one-mode networks, 2) 2-mode

networks, 3) socio-centric or complete networks, and 4) ego-centric networks or personal

networks. One-mode networks involve relationships within a group of similar nodes or actors, such as the exchange of information between physicians (the actors) in a hospital. Two-mode networks involve relationships between two different sets of nodes or actors, such as health care professionals (first set of actors) and dementia-related services (second set of actors). Socio-centric or complete networks involve all actors of a single 'bounded community', such as all physicians in a hospital. Ego-centric or personal networks are relationships determined from one actor's perspective only, direct relationships from the actor ('ego') to others ('alters') and the ego's perspective of relationships between the alters. An example would be a physician's information exchange with other physicians and the physician's perspective on how those physicians exchange information.

Given the nature of the data used in this study, a 2-mode network was the most appropriate type to present the relationships between the different types of participants and services identified at each time point in the vignette. Further, because information was not available on how the services identified, or the professionals, might have related to each other, there were no ties depicted between the services identified or the different types of professions, making the networks in this study not only 2-mode (two different sets of nodes) but also bipartite (no ties within each set of nodes and only between them). The unit of analysis is the dyad or the relationship between two sets of nodes: 1) the type of participating health care professional (i.e. type of participant depicted as diamond-shaped nodes colored by site) and 2) their identification of dementia-related care services (i.e. participant response depicted as circular-shaped nodes), which are represented in bipartite network graphs. The relationships between the two sets of nodes are considered to be unidirectional; the relationships are formed from participants to the services and not vice

versa. Hence, all linear black ties linking the nodes depicted in the graphs represent unidirectional relationships from the participants to the services identified.

The data used in this study was not designed for analysis using SNA methods; nevertheless, the data collection procedure was comparable to it. Data in SNA is typically collected using saturation surveys, name generators, and/or position generators from interviews, self-completed questionnaires, document analysis, diary methods, and observation (65). Saturation surveys are used for mapping complete networks, as each actor in the network provides information on relationships between all members in the network, which is either from a list of all members (particularly useful for smaller networks) or from memory recall (better for larger networks). Name generator and position generator methods are used for mapping ego-centric networks. Name generators involve asking the ego (focal person or group of interest) for the names of people they are related to in a relationship of interest, which is followed by a snowball sampling technique for a predetermined number of repeated times as a number of alters are randomly chosen. Position generators involve asking the ego for particular valued roles (e.g. physicians, patients, and administrators) from a list of possible roles. In both the name generator and position generator methods, name interpreter questions then follow the name generator and position generator questions to collect information on a number of characteristics that assist in more in-depth understanding of the relationships. For example, name interpreter questions may seek information on the names of the actor and alters, their characteristics, the relationship to the actor, and relationships between alters.

In this study, the data collection method was similar to a combination of the name generator and position generator approaches, as the respondents were asked to

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identify the resources they would consider in association with particular events in the vignette. The responses were observed as either a specific name of a service agency (similar to the name generator approach) or a form of service provision based on the role they would take in supporting the person with dementia and her caregiver (similar to the position generator approach). However, responses from the data were open-ended and not selected from a roster of predetermined services (a component of the position generator approach) and the interviewers did not follow-up with service agencies that were identified (a component of the name generator approach). Nevertheless, the data used in this study was still relevant and appropriate for SNA, as the type of respondents and services identified still comprise a network of relationships in dementia-related care.

There is a range of measures that can be used to analyze structure in 2-mode networks (39). For example, 'density' is a measure of cohesion of actors in a network (65). For 2-mode data, density is calculated by dividing the total number of observed ties by the maximum number of ties possible when every node in one set is connected to every node in the other (excluding self-loops) (39). 'Centrality' is a measure of the network structure that suggests popularity, efficiency, and power (65). Centrality measures in 2-mode data include 'degree centrality', 'closeness centrality', and 'betweenness centrality' (39). Degree centrality of an actor of interest is the sum of direct ties with the opposing set of nodes. Closeness centrality is a measure of distance and the level of independence, which is the total number of direct and indirect ties required to connect to an actor of interest with all nodes in the opposing set (the lower the distance the more independent the actor of interest). Betweenness centrality is the number of times an actor of interest connects pairs of others actors from each of the sets (which otherwise are not connected or provides the shortest

path for the connection), which indicates the degree to which the actor of interest is in control of the flow of resources between the other actors. Further, the role and the position measures of actors may indicate those with similar network structures, which can provide information on similarities in behavior. Measures of network structures were not calculated for this study, but warrant attention in subsequent phases of analyses.

The data collected for this study were entered into a database organized in a 2-mode matrix, where rows represent one set of actors and the columns represent the second set of actors (i.e. type of participants by services identified). Service identifications were indicated with a '1' and the absence of an identification was indicated with a '0'. The number of respondents identifying a service of interest determined the strength of the tie (i.e. the greater the number of respondents identifying a service, the greater the strength of the tie). This data were used to create graphs on R statistical software using the 'SNA' package (66). These graphs are visual representations of networks that display actors as nodes and the relational ties connecting the actors as lines (65). The bipartite graphs were developed for each service categorization. The nodes for each service categorization were determined by the included codes (see section 2.4 for more information on the coding technique). The number of codes included for each service categorization ranged from a very specific type of categorization with just one code to a relatively comprehensive service categorization with a larger number of codes. The thickness and length of the ties represent a measure of the strength of the relationship between the type of respondent and the service (i.e. the thicker and closer the tie, the greater the number of participants identifying a particular service). All network calculations and network graphs were conducted on R (61), see Appendix C for an example of the commands used for developing the bipartite graphs

Chapter 3: Results

In this chapter, 7 overarching dementia-related 'service types' are presented. Subsequently, 8 specific 'service categories' were developed and are presented as examples for some of the service types. For each service category, the results of chi-square tests compare the dichotomized data of those that identified particular services and those that did not, time-to-event analysis compares the data through time, and SNA compares the relationships between service identifications across sites and professions. SNA graphs with only 1 service node (i.e. only 1 service in a given service category) are presented in appendix D and those with 2 or more service nodes (i.e. 2 or more services in a given service category) are presented in the text, as they were judged to be the most interesting. When results are reported 'at' a particular time, the data were analyzed at that point in time. On the other hand, when results are reported 'by' a particular time, the data were analyzed cumulatively from time 1 to the indicated point in time. When reporting confidence intervals, CM=case managers, FP=family physicians, SP=specialists, CAL=Calgary, EDM=Edmonton, and OTT=Ottawa.

In figures relating to SNA, thicker and shorter ties generally indicate stronger relationships between the type of participant and type of service, whereas thinner and longer ties indicate weaker relationships. Abbreviations, symbols, and colors used in SNA include the following: T=time point; CC=Calgary case managers; CF=Calgary family physicians; CS=Calgary specialists; EC=Edmonton case managers; EF=Edmonton family physicians; ES=Edmonton specialists; OC=Ottawa case managers; OF=Ottawa family physicians; OS=Ottawa specialists; red circle-shaped nodes=dementia-related care services;

diamond-shaped nodes=types of participants; yellow nodes=case managers; blue nodes=family physicians; and green nodes=specialists.

3.1 Overview of dementia-related care services

The following overview of dementia-related care services addresses the first research question, which inquires about the types of services available and provided for people with dementia and their caregivers by the participants of this study. The 7 dementia-related service types presented (see figure 2) were developed in relation to participant responses to the vignette.

The service type labeled 'medical assessment, treatment, and care management' is located at the center of figure 2, as it brings together all the dementia-related types of services located on the periphery. For the purposes of this overview, care management includes medical assessment, treatment, and referrals, relating to risk factors, diagnosis, and behavioral and psychological symptoms of dementia. Important actors include family physicians, specialist services, and various care teams.

'Ancillary services related to co-morbidities' were deemed to be an important type of service in the overview, as services were identified in the context of the vignette and the patient with dementia had a complex medical background and eventually had a stroke. Rehabilitation, the stroke prevention clinic, and speech therapy were examples of services included in this service type. 'Future planning and related services' are an integral component of dementia-related care services, particularly for post-diagnostic support. This service type includes personal directives, power of attorney, and goals of care, all of which support the wishes of the patient with dementia from diagnosis to end of life.

The combination of 'Education, social engagement, social and psychological support services' form another service type, which includes both informal and formal services that support the patient with dementia and the family caregiver in coping with the diagnosis (e.g. family and friends, information sessions, counseling services, and support groups) and maintain their independence (e.g. senior programs and seniors' centers).

Further, the group of 'Home care and respite services' comprises another type of service providing support for IADL (e.g. food preparation and housekeeping) and basic ADL (e.g. bathing, dressing, toileting, transferring, continence, and feeding). In-home respite care, day programs and overnight respite services were also considered to be a part of this service type, because these community services support the patient with dementia and their caregiver to stay in the community.

'Safety and emergency services' ensure the safety of the patient with dementia in regards to appropriate medication use (e.g. use of blister packaging and dosettes), transportation (e.g. driving assessments, appropriate driving cessation, and use of transportation services), falls (e.g. assessments, education, and support), and wandering (e.g. wandering registry). Contingency services were also included in the case of medical emergencies, distress, crisis, and abuse.

Finally, the last service type was labeled 'continuing care services', providing increased care at a hospital or housing alternative (e.g. residential care or long-term care).

3.2 Comparing service choices by health care providers and place

While participants identified all the service types in figure 2, specific examples of services were selected for particular investigation on the basis of the quality of the data relating to them, their relevance to the CCCDTD (19), and consideration of their relative

importance in terms of patient and caregiver experience and health care policy and planning. These service categories were analyzed using the methods identified above with the purpose of answering the second research question regarding the similarities and differences in services between health care providers and sites for the different stages of dementia.

3.2.1 Medical assessment, treatment, and care management

3.2.1.1 Structural neuroimaging services

The first example of the 'medical assessment, treatment, care management, and coordination of services' type that will be considered is structural neuroimaging services. The structural neuroimaging categorization involves any identification of Computed Tomography (CT) scanning or Magnetic Resonance Imaging (MRI) throughout the disease trajectory. This service category was considered to be particularly important in informing clinical practice and health care planning, as the appropriate use of structural neuroimaging in dementia care is a complex matter that has been debated extensively.

While examining each point in time, the first structural neuroimaging identifications were observed at time 1 (warning signs) and the last identifications were observed at time 10 (stroke and hospitalization). At time 1, 25.0% of family physicians (2 participants from Edmonton and 1 from Ottawa) and 7.7% of specialists (1 participant from Calgary) identified structural neuroimaging. For example, a family physician from Ottawa identified a "CT scan to rule out any vascular cause", while a specialist in Calgary was less certain and said, "May or may not consider neuroimaging, CT, MRI, although dementia guidelines recommend neuroimaging, so traditionally CT".

At time 2 (screening results and early recognition), 40.0% of participants from Ottawa identified structural neuroimaging, which was 23.3% greater than the proportion of Edmonton participants and 15.0% greater than the proportion of Calgary participants; however, the differences were not statistically significant. There was a statistically significant difference among the professions in the identification of structural neuroimaging at this time (p=0.035). Fifty percent of family physicians identified structural neuroimaging, which was higher than the proportion of case managers (0.0%; 95% CI for the difference: 21.7% to 78.3%). Twenty-three percent of specialists identified this service, which was also higher than the proportion of case managers at this time (95% CI for the difference: 0.17% to 46.0%). There were also differences between these types of health care providers by time 2 (p=0.006).

By time 3 (mild cognitive impairment), there was a statistically significant difference between sites (p=0.009); the proportion of participants from Ottawa (80.0%) who identified structural neuroimaging was 46.7% higher than the proportion of Calgary participants (95% CI for the difference: 10.25% to 83.08%) and 63.3% higher than the proportion of Edmonton participants (95% CI for the difference between OTT and EDM: 30.79% to 95.88%). The differences in proportions between Ottawa and the other sites decreased when case managers were excluded; nevertheless, Ottawa (77.8%) continued to have a higher proportion of participants that identified this service than Calgary (27.8% higher) and Edmonton (52.8% higher). By time 3, 61.5% of specialists identified this service. There was a statistically significant difference (p=0.037) between the proportion of family physicians (33.3%) and case managers (11.1%) that made identifications (22.2%

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difference between FP and CM; 95% CI for the difference: 21.90% to 89.2%). These proportions remained unchanged by time 4 in the vignette (annual follow-up).

The majority of structural neuroimaging identifications were observed by time 5 (diagnosis) and no respondent 'changed their status' with regards to the identification of structural neuroimaging after this time (i.e. identifications of structural neuroimaging continued after time 5, but they were identified by participants who had already identified structural neuroimaging at an earlier time). In the vignette, the results of a CT scan were described at time 5, when the patient was formally diagnosed with mixed Alzheimer and vascular dementia. By this time, there continued to be a difference between the sites (p=0.005), as the proportion of Ottawa participants (90.0%) that identified this service was 56.7% higher than Calgary (95% CI for the difference: 24.15% to 89.18%) and 65.0% higher than in Edmonton (95% CI for the difference between OTT and EDM: 34.24% to 95.76%). When case managers were excluded, the proportion of participants that identified structural neuroimaging in Calgary increased by 16.7% while the proportion of participants in Edmonton remained the same; nevertheless, the proportion of participants from Ottawa only decreased 1.1% and maintained a higher proportion than the other sites (38.9% higher than Calgary and 63.9% higher than Edmonton). By the type of provider, the proportion of family physicians was 20.5% higher than specialists, and the proportion of specialists was 24.0% higher than case managers (the differences were not statistically significant). The differences in proportions remained the same from time 5 to the end of the vignette (when the patient died). See appendix D, tables 2 and 3, for the chi-square results at each time point and cumulatively for structural neuroimaging services.

In regards to SNA, the structural neuroimaging service category was represented in 1 service node (node 1) at and by each time in the SNA graph, which is located at the center of the network with the types of participants forming relationships with that node. At time 1 (warning signs), 3 participant nodes (2 family physicians nodes from Edmonton and Ottawa, and a specialist node from Calgary) formed a relationship with the structural neuroimaging node. By time 2 (screening results and caregiver recognition), 5 participant nodes (all 3 family physician nodes from each site and 2 specialist nodes from Ottawa and Calgary) formed relationships with the service node. By the time the patient was told she had mild cognitive impairment (time 3), the relationships of the physician-specific nodes with the service node were stronger, as more physician participants identified structural neuroimaging. Also by time 3, the first case manager node from Ottawa identified this service, but the relationship was relatively weaker than the other nodes in the network as fewer Ottawa case managers identified this service than the other participant types. By the time of diagnosis (time 5), a case manager node from Calgary formed a relationship with the service node, but similar to the Ottawa case manager node, the relationship is relatively weak compared to the physician-specific nodes. See appendix D, figures 12 and 13, for the bipartite network graphs at and by each time point for structural neuroimaging.

By site, the log-rank test showed that the time-to-event curves were not all the same, as the test was significant (p=0.0038); 9 events were observed in Ottawa compared to 4 in Calgary and 3 in Edmonton. By the type of provider, the log-rank test did not show that the time-to-event curves were different (test was not statistically significant). See

appendix D, figures 14 and 15, for the time-to-event network graph by site and type of provider for structural neuroimaging services.

There were also identifications of structural neuroimaging at time 9 (increase in support for activities of daily living and caregiver stress) and time 10 (stroke and hospitalization). For example, at time 10, a family physician from Calgary stated, "With the constellation of all the things going on and all the falls, it may be appropriate to CT the head to make sure there's nothing wrong in her head". Two family physicians in Ottawa also identified a "CT scan to monitor her progress in terms of brain atrophy". Because these comments were from participants who had already identified it before, the statistical analysis was not altered.

3.2.1.2 Depression-related services

The second example of the 'medical assessment, treatment, care management, and coordination services' type selected for analysis is depression-related services. This service categorization includes services relating to any assessment or treatment (pharmacological or non-pharmacological) that is specific to depression. This service category was considered to be particularly important to health care planning, as depression is a common comorbidity in patients with dementia and it is often difficult to diagnose. Further, behavioral and psychological symptoms of dementia were presented in the vignette, which was an opportunity to examine services related to depression.

At time 1 (warning signs), 23.5% of all participants identified an assessment of depression, which were observed in 38.5% of specialists, 16.7% of family physicians, and 11.1% of case managers. More than one third of participants from Edmonton and Ottawa identified this service category at this time, while only 8.3% of participants identified it in

Calgary. For example, a specialist in Edmonton indicated that they would "Investigate whether it could be mood disorder such as depression, so possible test I would administer would be a MMSE [mini-mental state examination], MoCA [Montreal Cognitive Assessment], and geriatric depression scale". No changes were observed, cumulatively, until time 5 (diagnosis).

At time 5, 23.1% of specialists and 11.1% of case managers identified this service category, and no identifications were observed from family physicians. At the same time, the highest proportion of participants that identified this service category was in Ottawa (30.0%), while only 8.3% of participants in Calgary and 0.0% of participants in Edmonton identified this service category; the differences in proportions were not statistically significant. For example, a specialist from Ottawa indicated the following: "Changes in mood, so ask questions around depression and if there is anxiety that needs to be looked at". No changes were subsequently observed, cumulatively, until time 8 (increase in support with IADL, basic ADL, and behavioral and psychological symptoms).

At time 8, 23.5% of participants identified services related to depression and there was a statistically significant difference between sites (p=0.005), which marked an increase in the proportion of identifications from Ottawa (60.0%). The proportion of participants from Ottawa that made identifications was 51.7% higher than the proportion of participants in Calgary and Edmonton (95% CI for the difference between OTT and CAL or OTT and EDM: 17.5% to 85.8%). The differences in proportions were similar when case managers were excluded (the proportion of participants in Ottawa were 54.2% higher than the proportion of participants in Calgary and Edmonton). There was no statistically significant difference between the types of providers at time 8; however, the proportion of

specialists (38.5%) that made identifications were 38.5% higher than case managers and 13.5% higher than family physicians.

By time 8, 80.0% of participants from Ottawa had identified this service category, which was significantly higher than the other sites (p=0.012); the proportion of participants that made identifications from Ottawa were 63.3% higher than participants from Calgary (95% CI for the difference: 30.8% to 95.9%) and 38.3% higher than participants from Edmonton (95% CI for the difference between OTT and EDM: 1.0% to 75.7%). When case managers were excluded, the differences in proportions were similar (the proportion of participants from Ottawa, 88.9%, was 76.4% higher than Calgary and 26.4% higher than Edmonton). A statistically significant difference was also observed when comparing between types of providers by this time (p=0.026); the proportion of specialists (69.3%) that identified depression-related services was 58.1% higher than case managers (95% CI for the difference: 25.7% to 90.6%). The proportion of family physicians (41.7%) that identified this service category was 30.6% higher than case managers, but the differences in proportions were not statistically significant. Following time 8, no further changes to the proportions were observed, cumulatively, until time 12 (increase in behavioral and psychological symptoms).

By time 12, the highest proportion of participants that identified this service category, by site, was in Ottawa (80.0%, p=0.033); which was 55.0% higher than the proportion of participants in Calgary (95% CI for the difference: 20.1% to 89.9%) and 38.3% higher than the proportion of participants in Edmonton (95% CI for the difference between OTT and EDM: 1.0% to 75.7%). When case managers were excluded, the proportion of participants that made identifications from Ottawa (88.9%) was higher than

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Edmonton (26.4% higher), but the difference in proportions decreased by 11.9%; the

difference in proportions between Ottawa and Calgary participants increased by 8.4%. By

type of provider, specialists had the highest proportion of participants that identified this

service category (76.9%, p=0.009), which was 65.8% higher than the proportion of case

managers that made identifications (95% CI for the difference SP and CM: 35.1% to

96.6%). See tables 4 and 5 for the results of the chi-square tests of depression-related

service identifiers at each point in time and cumulatively.

Further, SNA provides detail on specific service identifications in the

depression-related service category; see figures 3 and 4 for the bipartite graphs. At time 1,

the first relationships were formed between the service node for depression assessments

(node 3) and physician-specific participant nodes, i.e. participants from Edmonton

(EF=family physician and ES=specialist) and Ottawa (OS=specialist). The node

representing specialists from Edmonton (ES) also formed relationships with 2 other service

nodes, the geriatric depression scale (node 2) and mood assessments (node 8). Another

participant node, case managers from Calgary (CC), formed a relationship with node 1

(family physicians) and similar to the other participants at this time, formed a relationship

with node 3. No new relationships were formed between times 2 and 4. By time 5

(diagnosis), physician-specific participant nodes from Edmonton (EF and ES) and Ottawa

(OS) formed relationships with nodes 3 and 8. No new identifications were observed at

time 6 (3-month follow-up) or 7 (increase support in IADL).

At time 8 (increase in behavioral and psychological symptoms), only physician-

specific nodes were observed (CS, ES, OS, and OF); they were with all sites and the

participants were mainly specialists. The service nodes located at the center of the network,

which were nodes with multiple relationships with various participant nodes, were nodes 3, 4 (anti-depressants), and 10 (geriatric psychiatry). The service nodes located at the periphery were node 8 (formed a relationship with the Edmonton specialist node) and node 9 (other medications, formed a relationship with the specialists from Ottawa node). By time 8, the strongest relationship observed was between service node 3 and the Ottawa specialist node (OS), as all specialists from Ottawa identified this node at least one during the vignette. No new identifications were observed until time 12, when a new relationship was observed between the specialists from Calgary node and service node 7 (psychiatric assessment). No further changes were subsequently observed.

Throughout the vignette, the time-to-event curves were not all the same by site (p=0.0347) or by provider (p=0.0098). See appendix D, figures 17 and 18, for the time-to-event graphs.

Figure 3. Bipartite graph of depression-related services, identified at each time
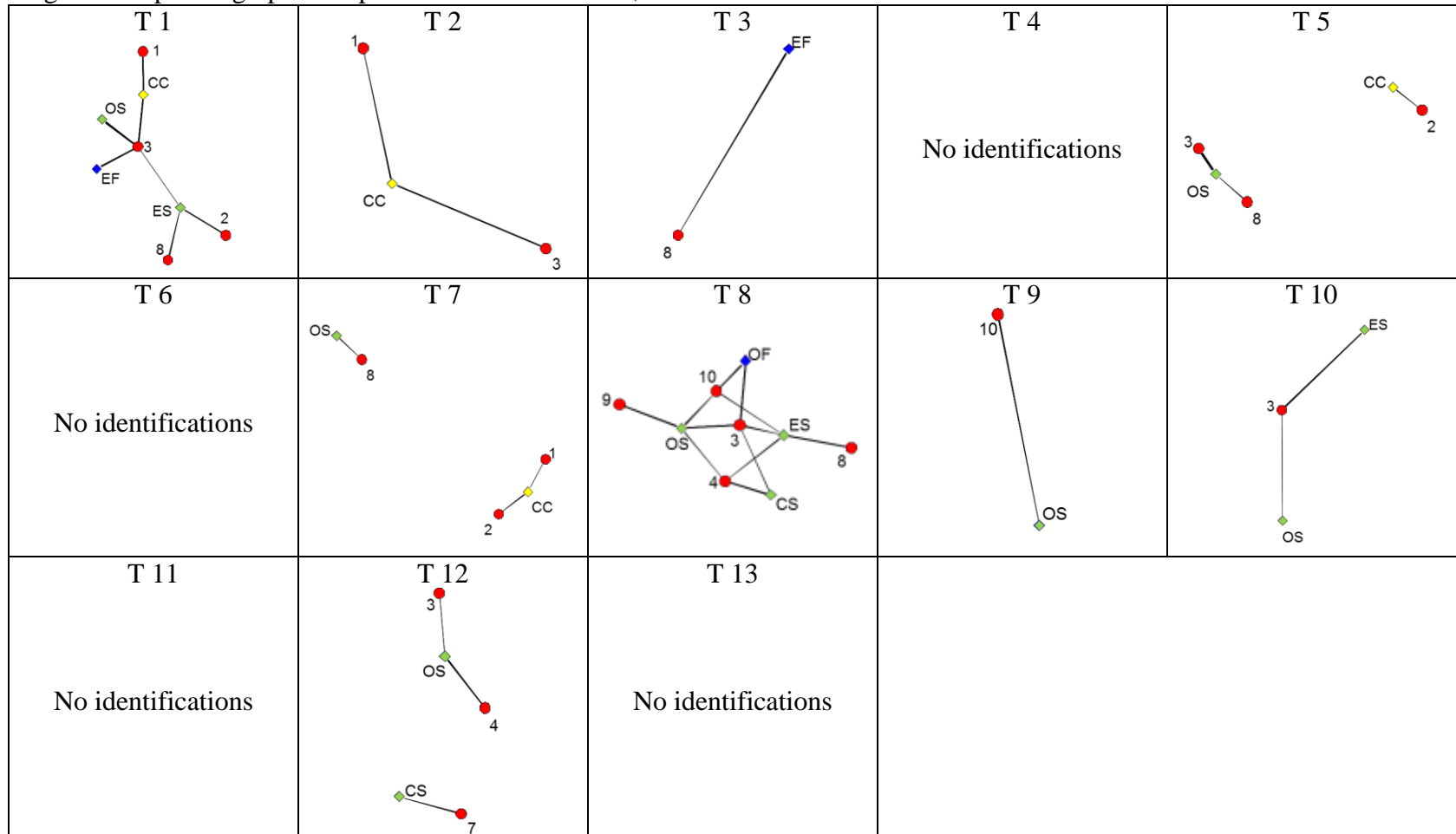
Figure 4. Bipartite graph of depression-related services, identified cumulatively
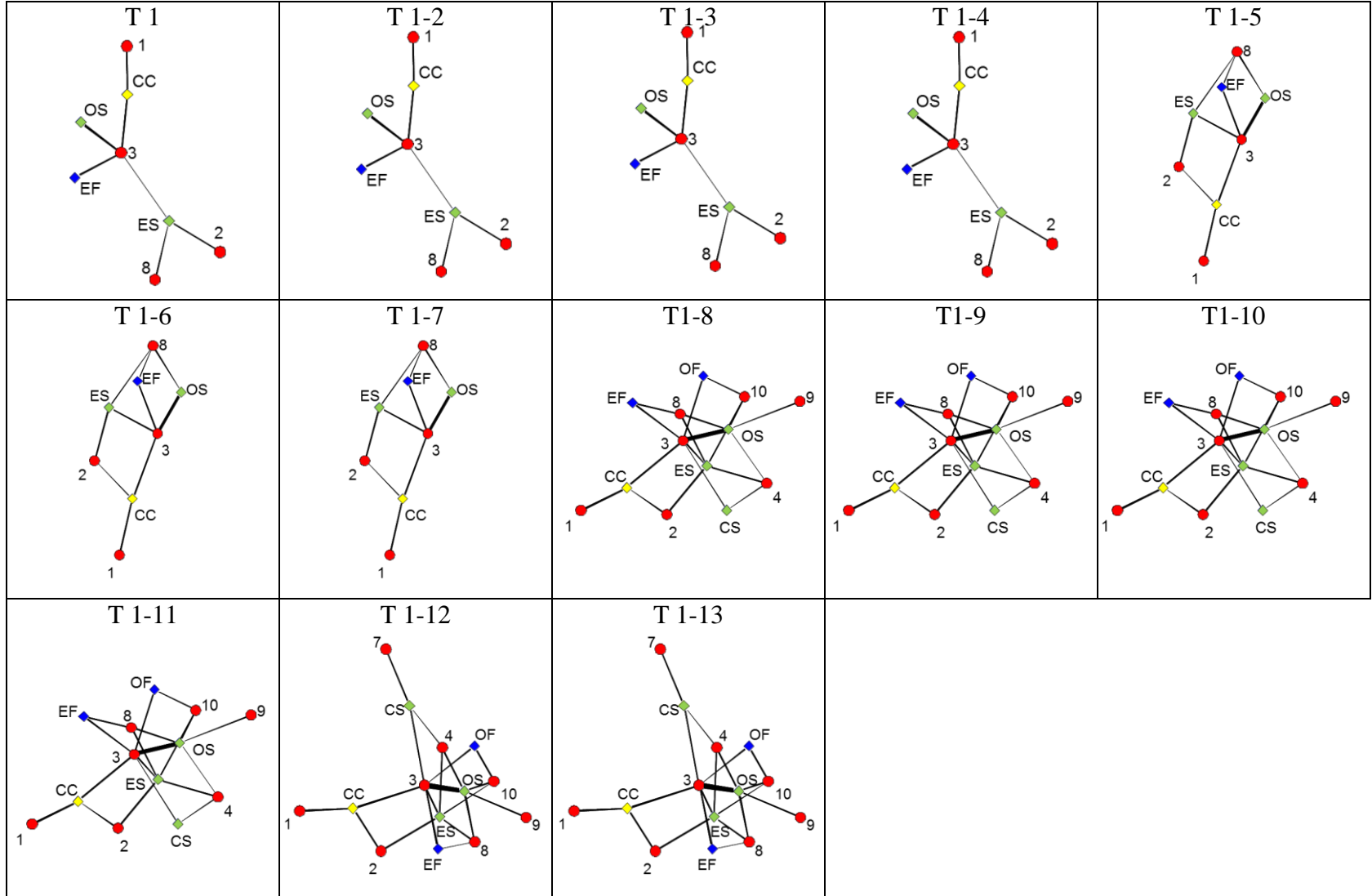
Legend for figure 3 and 4:

Node 1=family physician

Node 2=geriatric depression scale

Node 3=assess for depression (general identification)

Node 4=antidepressants e.g. SSRI

Node 7=psychiatric assessment

Node 8=assess mood

Node 9=other medications to control anxiety

Node 10=geriatric psychiatry

3.2.1.3 Delirium-related services

The third example of the 'medical assessment, treatment, care management, and coordination services' type selected for discussion is a service category involving delirium-related services, i.e. any identification or recognition of delirium risk, assessment, and treatment. This service category was regarded as being important to the medical diagnosis and prognosis of patients with dementia, as delirium is often not recognized but is common in patients with dementia and their prognosis could be substantially worsened should it not be detected and treated in a timely manner. Further, the hospitalization of the patient in the vignette presented a valuable opportunity to assess the recognition of delirium risk and assessment by clinicians in the hospital setting.

At time 1 (warning signs), only 8.8% of all participants identified this service category. By time 2 (screening results and early recognition), there was an overall 5.9% increase in the proportion of participants that identified the assessment of delirium; the proportion of participants that identified this service category in Ottawa (20.0%) was 11.7% higher than the proportion of participants in Edmonton and 3.3% higher than the proportion of participants in Calgary. By type of provider, the differences in proportions were small, as the proportion of family physicians (16.7%) that made identifications was only 5.6% higher than case managers and 1.3% higher than specialists. No subsequent changes in the proportions were observed until time 5 (diagnosis), cumulatively.

At time 5, only 8.8% of participants (3 physicians, 1 from Edmonton and 2 from Ottawa) identified delirium. By this time, there continued to be a higher proportion of participants from Ottawa (30.0%) that was 21.7% higher than Calgary and 13.3% higher than Edmonton. The proportion of specialists (23.1%) that identified this service category was 12.0% higher than case managers and 6.4% higher than family physicians. No

subsequent changes were observed in the proportions until time 8 (increase support in IADL, ADL, and BPSD), cumulatively.

By time 8, the highest proportion of participants that identified this service category continued to be Ottawa (40.0%), which was 31.7% higher than Calgary and 23.3% higher than Edmonton. By type of provider, physicians (25.0% of family physicians and 23.1% of specialists) exceeded the proportion of case managers (11.1%) that identified this service category. By time 9 (increase support in ADL and caregiver stress), the proportion of specialists that made identifications of this service category increased to 30.8%. At time 10 (stroke and hospitalization), 44.1% of participants identified delirium-related services (53.9% of specialists, 41.7% of family physicians, and 33.3% of case managers), and the proportion of participants that made identifications from Ottawa (30.0%) was almost half of the participants from Calgary (58.3%). By time 10, Calgary had the highest proportion of participants that identified this service category (66.7%). No identifications were made at time 11 (transition from home to long-term care). None of the differences in proportions were statistically significant up to this time point in the vignette.

However, at time 12 (increase in behavioral and psychological symptoms), there was a statistically significant difference between the proportions of providers that had made identifications of this service (p=0.026). The proportion of specialists (69.2%) that made identifications were 58.1% greater than the proportion of case managers (95% CI for the difference: 25.7% to 90.5%) and the proportion of family physicians (50.0%) was 38.9% greater than the proportion of case managers (95% CI for the difference: 3.9% to 73.8%). There was no statistically significant difference between sites; nevertheless, the proportion of participants from Ottawa (60.0%) was almost doubled the proportion of participants in Edmonton (33.3%). Fifty percent of participants from Calgary also made

identifications by time 12. By the end of the vignette, 61.8% of all participants, regardless

of the type of provider and location, identified the delirium-related services. See appendix

D, tables 6 and 7, for the chi-square results at each time and cumulatively.

When examining the SNA results, see figures 5 and 6 for the bipartite graph at

each point in time and cumulatively. At time 1, the Calgary case manager node (CC)

formed relationships with service nodes 1 (delirium assessment), 6 (family physician), 7

(cognitive assessment), and 8 (rule out any reversible or treatable causes). Similarly, the

Edmonton family physician node (EF) also formed relationships with service nodes 1 and 8

at this time. At time 2 (screening results and early recognition), the Ottawa specialist node

(OS) formed new relationships with services nodes 1, 8, 13 (pharmacy to assist with

medications), and 14 (prevent infections).

There were no new identifications until time 8 increase in support with IADL,

basic ADL, and behavioral and psychological symptoms), when new relationships were

formed between the Ottawa family physician node (OF) with service node 1. Also, the

Edmonton family physician node (EF) formed a relationship with service node 10 (review

medications). By time 8, the bipartite graph indicated that participant nodes that had formed

relationships with service nodes by this time had commonly identified nodes 1 and/or 8,

which were hence located at the center of the network. Meanwhile, the other service nodes

were located at the periphery, which were not commonly identified and were specific to

each participant type. At time 9 (increase support in ADL and caregiver stress), the

specialist nodes from Calgary (CS) and Ottawa (OS) identified node 8 (rule out any

reversible or treatable causes).

Relative to other time points in the vignette, an increased number of

relationships were formed at time 10 (stroke and hospitalization) between participant nodes

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and service nodes. Among the participants that had identified delirium-related services at time 10 (all participant types except for the Ottawa case manager node), relationships were commonly formed with service nodes 1, 8, and/or 10; hence, these service nodes were positioned at the center of the network. At the same time, the Calgary case manager node (CC) formed relationships with service nodes 2 (geriatric assessment), 3 (Hospital Elder Life Program), 4 (Nurses Improve Care for the Hospitalized Elderly), and 5 (Regional Community Transition Program units), which were unique to this participant node. Meanwhile, the Calgary specialist node (CS) and the Edmonton family physician node (EF) formed relationships with services nodes 11 (geriatric psychiatrist) and 12 (rehabilitation); also, the Calgary family physician node (CF) formed a relationship with service node 9 (Geriatric Assessment and Rehabilitation Unit). There were no identifications at time 11.

In relation to earlier time points in the vignette, there was another increase in the number of relationships that were formed at time 12 (increase in behavioral and psychological symptoms). At this time, all physician-specific nodes (all sites) formed relationships with service node 8 (rule out any reversible or treatable causes); a particularly strong relationship was formed between this service node and the Ottawa specialist node (OS), which has a relatively thick and close tie with node 8. No identifications were observed at time 13. However, two service nodes (nodes 1 and 8) were located relatively at the center of the network with short and thick ties to a number of participants, particularly with specialists and family physicians, by the end of the vignette. Overall, only physicians identified the review of medications, the Calgary case managers identified a number of different services for delirium, and there were no commonly identified programs for patients at risk of delirium among providers or locations.

The log-rank tests by type of provider and site, showed that the time-to-event curves were not statistically significant. Time-to-event graphs are illustrated in appendix D, figures 19 and 20.

Figure 5. Bipartite graph of delirium-related services, identified at each time
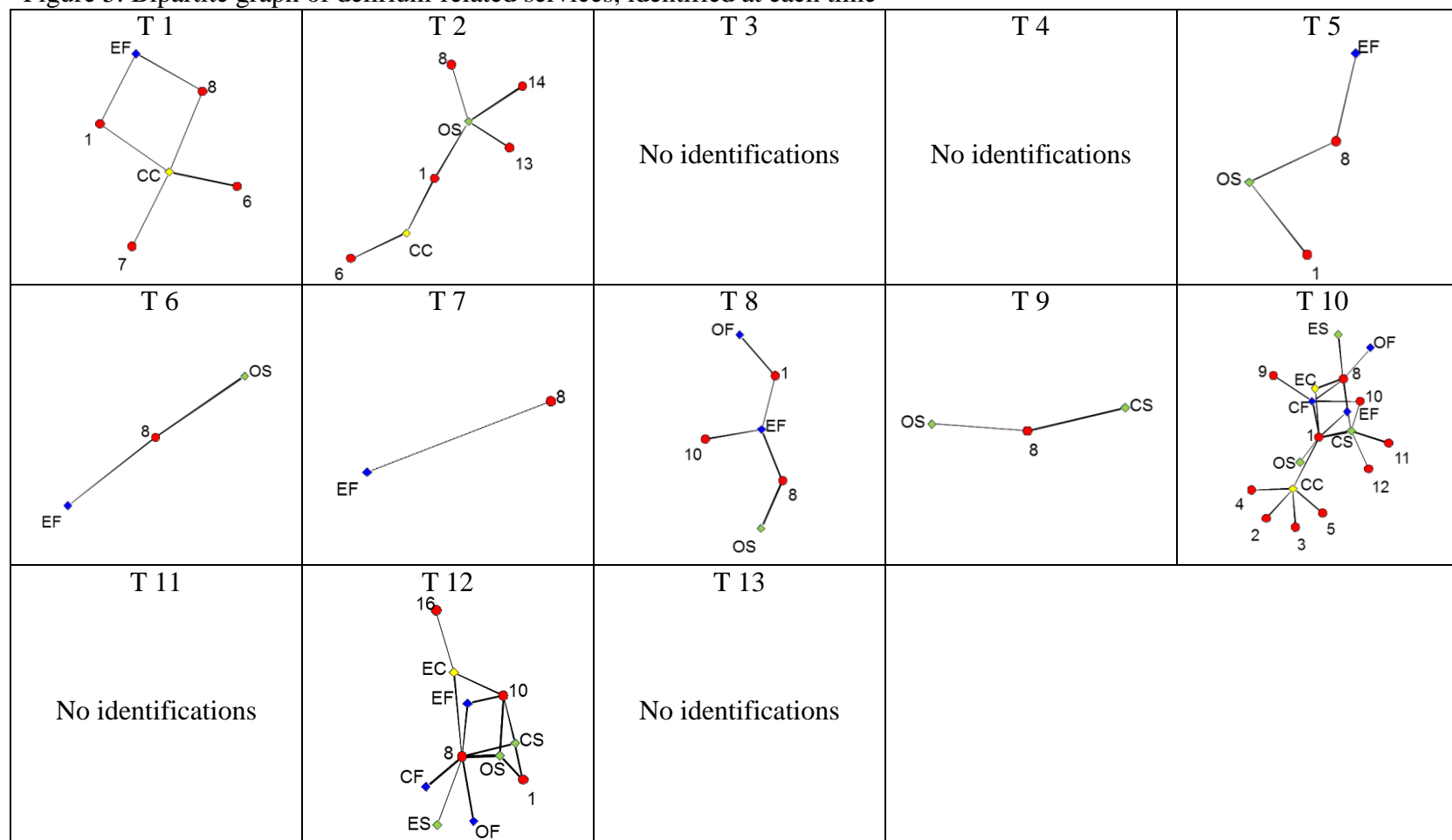
Figure 6. Bipartite graph of delirium-related services, identified cumulatively
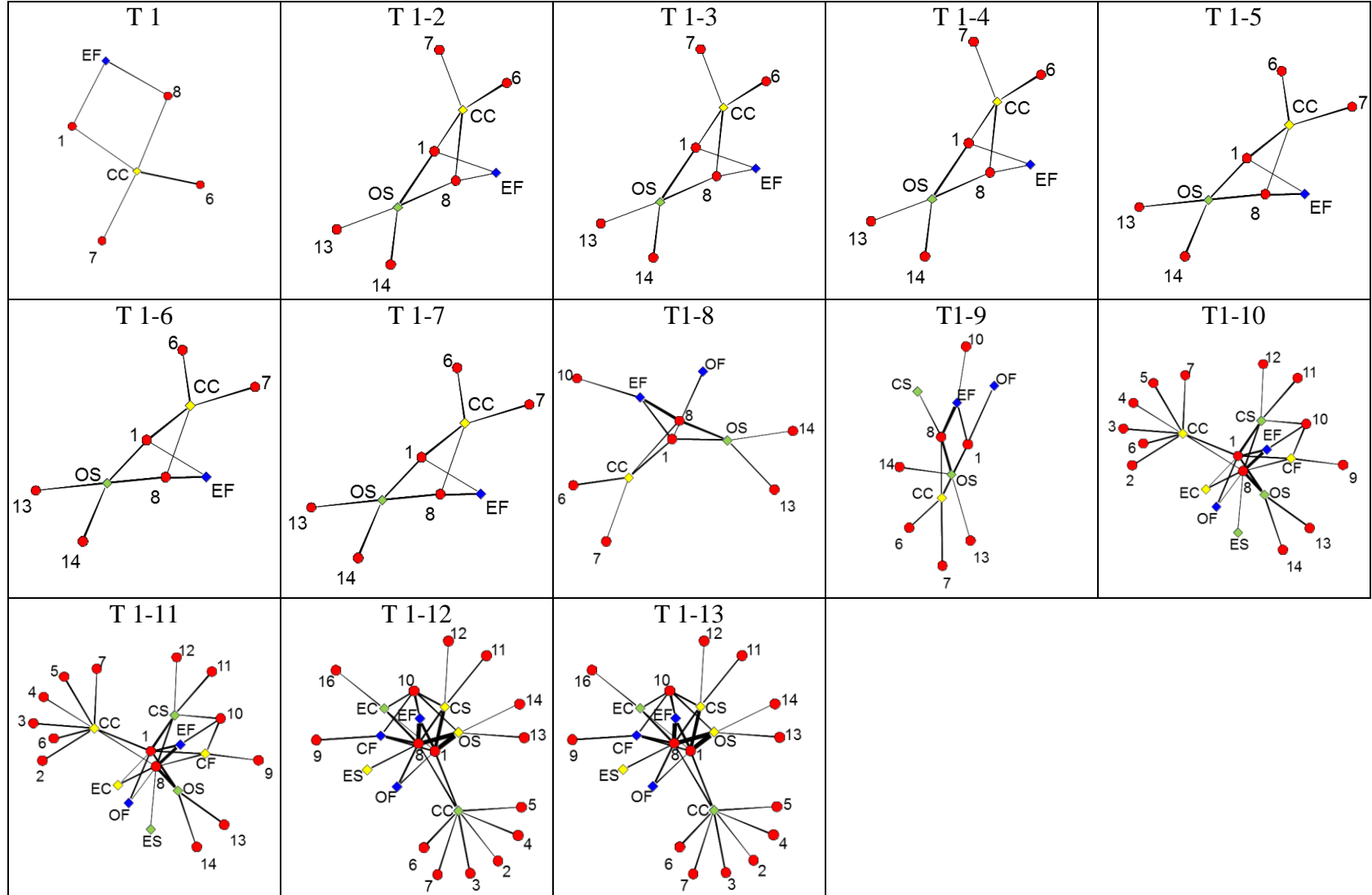
Legend for Figure 5 and 6:

Node 1=delirium assessment

Node 2=geriatric assessment

Node 3=Hospital Elder Life Program (HELP)

Node 4=Nurses Improve Care for the Hospitalized Elderly (NICHE)

Node 5=Regional Community Transition Program (RCTP) units

Node 6=family physician

Node 7=cognitive assessment

Node 8=rule out any reversible or treatable causes

Node 9=Geriatric Assessment and Rehabilitation Unit

Node 10=review medications

Node 11=geriatric psychiatrist

Node 12=Rehabilitation

Node 13 Pharmacy to assist with any medications

Node 14=prevent infections

3.2.2 Future planning and related services

This type of 'future planning and related services' encompasses the advice and discussions relating to future planning specific to medical and financial decisions aimed at understanding patient wishes and preferences prior to losing their decision making capacity. This type of service was deemed to have clear implications for clinical practice. Dementia is characterized by cognitive impairment that eventually interferes with their decision-making abilities. Hence, early future planning is important both for the patient themselves, their loved ones, and their health care providers to ensure that the patient's values and wishes are reflected in their medical treatment and care.

Case managers were the only providers to identify future planning and related services at time 1 (22.2% of case managers made identifications, 1 from Calgary and 1 from Edmonton). As demonstrated in figure 7 and 8, these identifications at time 1 were specifically regarding 'personal directives' and 'power of attorney or proxy'. For example, a Calgary case manager said, "I would likely talk about personal directives and power of attorney, because she would still be able to give direction on that at this point and time". At time 2 (screening results and early recognition), by site, there was a statistically significant difference between the proportions of participants that identified this service (p=0.016); more participants from Calgary identified this service category than from the other sites (33.3% of participants from Calgary compared to 0.0% from Edmonton or Ottawa; 95% CI for the difference between CAL and EDM or CAL and OTT: 6.6% to 60.0%). The proportion of Calgary participants that made identifications increased to 50.0% when case managers were excluded.

By time 3 (mild cognitive impairment), 44.1% of all participants identified this service category; the proportion of participants from Calgary (41.7%) that identified this

service category was 55.0% greater than the proportion of participants from Ottawa (95% CI for the difference: 20.1% to 89.9%) and 41.7% greater than the proportion of participants from Edmonton (95% CI for the difference: 5.4% to 77.9%; p=0.023). When case managers are excluded, the differences in proportions were slightly altered, the proportion of Calgary participants (75.0%) were 63.9% greater than the proportion of participants from Ottawa and 37.5% greater than the participants from Edmonton. By type of provider, 55.6% of case managers, 46.2% of specialists, and 33.3% of family physicians identified this service category by time 3 (the differences in proportions were not statistically significant. By time 4, the proportion of participants that identified future planning and related services continue to increase among participants in Edmonton to 50.0%.

The proportion of participants from Calgary increased to 83.3% by time 5 (diagnosis), and was 53.3% greater than the proportion of participants that made identifications from Ottawa (p=0.038; 95% CI for the difference: 18.0% to 88.7%); the difference in proportions was similar when case managers were excluded (52.8% difference between Calgary and Ottawa participants). By time 6 (3-month follow-up) and time 7 (increase support in IADL), there were also differences in proportions that were statistically significant between sites (p=0.010); the proportion of participants that made identifications in Calgary (91.7%) were 61.7% higher than Ottawa (95% CI for the difference: 29.2% to 94.1%) and 41.7% higher than Edmonton (95% CI for the difference between CAL and EDM: 9.3% to 74.0%). Similar differences in proportions were observed when case managers were excluded (the proportion of participants from Calgary, 87.5%, were 65.3% greater than the proportion of participants from Ottawa and 37.5% greater than the proportion of participants from Edmonton). Further, a higher proportion of care managers

(77.8%) and specialists (69.2%) identified this service category than family physicians (33.3%), but the differences in proportions were not statistically significant (by times 6 and 7).

There was a small increase in the proportion of participants from Edmonton that identified this type of service by time 8 (increase support in IADL, ADL, and behavioral and psychological symptoms), which slightly decreased the difference in proportions between Calgary and Edmonton; however, the differences in proportions between locations remained statistically significant (p=0.012). The distribution of proportions across the types of providers was similar to the previous time and the differences were not statistically significant.

By time 9 (increase support in ADL and caregiver stress), the distribution of proportions remained similar; there was a statistically significant difference (p=0.035) in the proportion of identifiers between sites, as the proportion of participants from Calgary (91.7%) that identified future planning and related services was 51.7% greater than Ottawa (95% CI for the difference: 17.5% to 85.8%) and 33.4% greater than Edmonton (95% CI for the difference between CAL and EDM: 1.3% to 65.3%). The differences in proportions were similar when case managers were excluded: the proportion of Calgary participants (87.5%) that made identifications was 54.2% greater than Ottawa and 25.0% greater than Edmonton. At time 9, there was 1 new identifier (a participant that had not identified this service category before), which was a specialist from Ottawa.

When the patient was admitted into the hospital at time 10, there was a small increase in the proportion of participants from Ottawa that identified this service category, and the differences in proportions across sites were no longer statistically significant (cumulatively and at that point in time). At this time, there was 1 new identifier of this

service category from an Ottawa family physician. By time 10, the proportion of case managers (77.8%) and specialists (76.9%) remain unchanged, while there was a small increase in the proportion of family physician identifiers (50.0%); the differences in proportions between remain not statistically significant.

At time 11 (transition from home to long-term care), there was 1 new identifier, a case manager from Edmonton. By this time, there was a final increase in the proportion of Edmonton identifiers (66.7%) and case managers identifiers (88.9%). Generally, the comments were related to reviewing, updating, or activating the future planning structures already in place. For example, a Calgary family physician stated, "In terms of the enduring power of attorney and personal directive, hopefully they would have indicated how they want for the last days of the wife's life to be handled, but I think that it should be updated as we go long here" (time 11). Also, a Calgary specialist stated, "At this point, if it hasn't come up already in terms of the decisions that are being made, we would look at assessing her capacity, and most certainly she would be incapable would be my guess and activating her personal directives if that hasn't come up before" (time 11).

The last new identifier was a family physician from Ottawa at time 12. Cumulatively, no changes were observed from time 12 to the end of the vignette. Overall, Calgary (91.7% of identifiers) exceeded the proportion of identifiers in Edmonton (67.7%) and Ottawa (60.0%). Further, the proportion of case managers identifiers (88.9%) exceeded specialists (76.9%) and family physicians (58.3%); however, the differences in proportions were not statistically significant. See tables 8 and 9 (appendix D) for the chi-square results of future planning services at each time and cumulatively.

When examining the network maps for each time point (figures 7 and 8), the case manager nodes from Calgary (CC) and Edmonton (EC) were the first to form

relationships with the service nodes 8 (personal directives) and 10 (power of attorney or proxy), which was observed at time 1 (warning signs). At time 2 (screening results and early recognition), Calgary family physicians (CF) and specialists (CS) nodes also formed relationships with those service nodes. In addition, the Calgary family physician node also formed relationships with service nodes 6 (lawyer), 7 (living will), and 11 (social worker). At time 3 (mild cognitive impairment), there was a relative increase in the number of relationships formed between participant and service nodes. Calgary and Edmonton nodes (except for case managers in Edmonton) formed relationships with personal directive (node 8) and power of attorney (node 10) services. Meanwhile, the Ottawa case manager (OS) and specialist (OS) nodes formed relationships with the power of attorney service. Also, the Calgary case manager node (CC) formed a relationship with advanced care planning (node 1).

At time 4 (annual follow-up), the Ottawa case manager node (OC) formed a relationship with service node 2 (conflict decision making, future planning, or finances and medical decisions), which was the first time that this participant node formed a relationship with any service. No new relationships were formed at time 5 (diagnosis); however, the relationships between the participant nodes and service nodes 8 and 10 were stronger. At time 6 (3-month follow-up), there was a new relationship between the Edmonton family physician node and service node 2. No new relationships were formed at time 7 (increase support in IADL). At time 8 (increase in support with IADL, basic ADL, and behavioral and psychological symptoms), there were new relationships formed between the Calgary family physician node (CF) with service Goals of Care services (node 5), and the Edmonton family physician node (EF) with service node 1.

At time 9 (increase support in ADL and caregiver stress), the Ottawa specialist node (OS) formed a relationship with nodes 2, 4 (end of life care planning), and 11 (social worker), and the Calgary case manager node (CC) formed a relationship with node 5. At time 10 (stroke and hospitalization), a new relationship was formed between the Edmonton specialist node and service node 2. At time 11 (transition from home to long-term care), new relationships were formed between the Calgary specialist node with service node 5, and the Edmonton specialist node with service node 9 (philosophy of care). At time 12 (increase in behavioral and psychological symptoms), a relationship was formed between the Ottawa family physician node and service node 3 (do not resuscitate). At time 13 (patient died), the Calgary family physician node and the Ottawa specialist node also formed relationships with node 3.

Overall, personal directives and power of attorney were identified by at least one respondent in each of the time points up to time 11, following which they were no longer identified at all. By time 13, personal directives and power of attorney or proxy tend to be identified together by participants from Calgary and Edmonton; participants from Ottawa also commonly identified the power of attorney. Hence, personal directives and power of attorney or proxy tend to be key and common determinants of the future planning and related services. Power of attorney is identified by at least one respondent from each site and professional respondent type. The key nodes are located at the center of the map with thick and short ties to the majority of the participants. 'Advance care planning' was an identification made by at least one respondent in Edmonton and Calgary, while 'goals of care' are unique to participants in Calgary (made by at least one respondent from each provider), which were positioned at the periphery of the network with thinner and longer ties. 'Do Not Resuscitate' was identified by at least one physician in Calgary and Ottawa at

times 12 and 13, while no other forms of future planning and related services were identified during these last points in time. Professionals identified in relation to future planning were lawyers and social workers.

The log-rank test by site, showed that the time-to-event curves were not all the same as the test was significant (p=0.0121). However, the log-rank test by type of participant was not statistically significant. See appendix D (figures 21 and 22) for the time-to-event graphs relating to future planning and related services.

Figure 7. Bipartite graph of future planning and related services, identified at each time
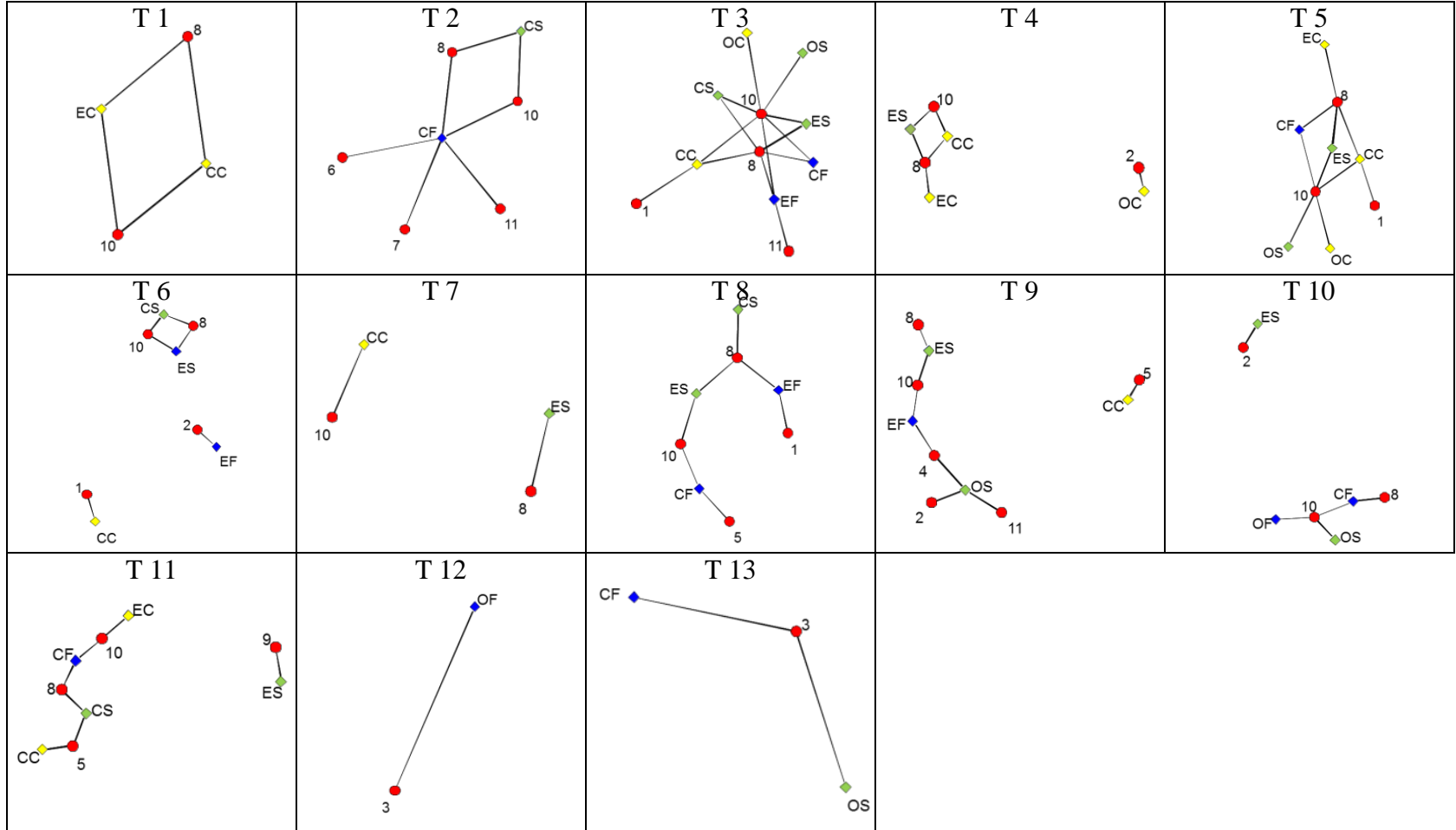
Figure 8. Bipartite graph of future planning and related services, identified cumulatively
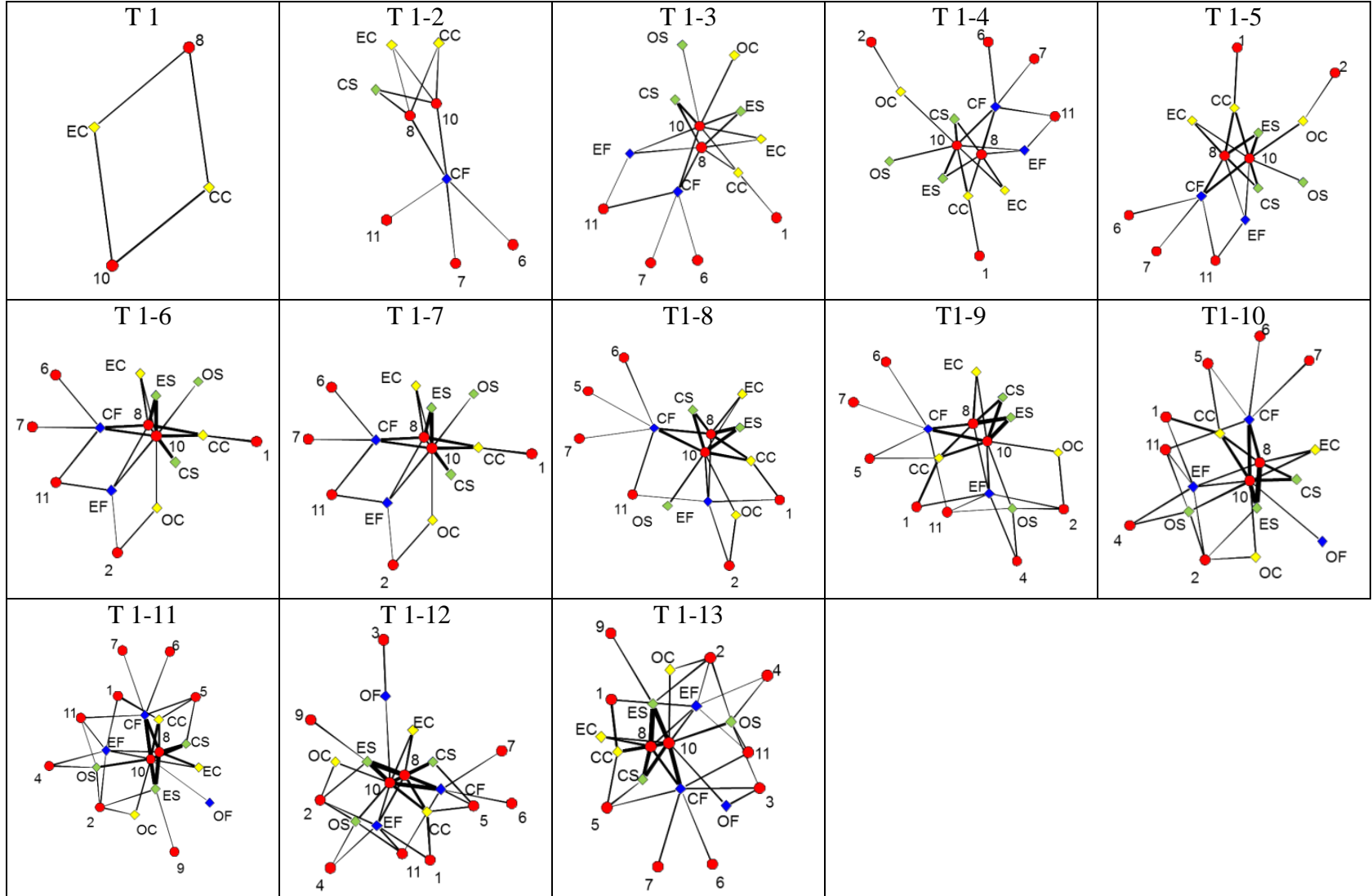
Legend for figure 7 and 8:

Node 1=advance care planning

Node 2=conflict decision making, future planning, or finances and medical decisions

Node 3=do not resuscitate

Node 4=end of life care planning

Node 5=goals of care

Node 6=lawyer

Node 7=living will

Node 8=personal directives

Node 9=philosophy of care

Node 10=power of attorney or proxy

Node 11=social worker

3.2.3 Education, social engagement, and social and psychological support services

3.2.3.1 Informal support networks

An example of the 'education, social engagement, and social and psychological support services' type was the informal social network service category, which includes both family and friends. It was considered to be an essential component of dementia care that provides various forms of support, both practical and emotional, to help share the caregiving role; informal social networks are powerful in preventing social isolation and helping to cope with the disease for the patient with dementia and their family caregiver.

At time 1, there was a difference (p=0.011) in the proportion of case managers that identified support from informal social networks in comparison to the other providers. 44.4% of case managers identified this service; a proportion that was 36.1% higher family physicians (95% CI for the difference: 0.08% to 72.1%) and 44.4% higher specialists (95% CI for the difference between CM and SP: 12.0% to 76.9%). The proportion of participants from Edmonton (25.0%) that made identifications of this service category was 16.7% greater than Ottawa and 15.0% greater than Calgary, but the differences in proportions were not statistically significant. At this time, family and friends were identified for a variety of reasons, such as support for medication monitoring, providing information to assist in the diagnosis, and preventing isolation. By time 2 (screening results and early recognition), there were still no specialist identifiers (0.0%), which was significantly less than the proportion of case managers identifiers (44.4%, p=0.027).

Time 3 (mild cognitive impairment) was the first time that specialists (23.1%) identified family and friends. By time 3, case managers (55.6%) and participants from Edmonton (41.7%) continued to maintain the highest proportion of participants that made

identifications compared to other providers and sites, respectively. Family and friends tended to be identified in relation to future planning, preventing isolation, and education.

By time 4 (annual follow-up), the proportion of participants by site and provider increased slightly and the distributions by proportion are similar to the previous time. At time 5 (diagnosis), the highest proportion of identifiers was observed (32.4%) compared to any other single point in time. The proportion of case managers that made identifications (77.8%, p=0.002) was significantly higher than family physicians (25.0%; 95% of the difference: 16.2% to 89.4%) and specialists (7.7%; 95% CI for the difference: 39.3% to 100.0%). Generally, at time 5, identifications of family and friends were related to driving, respite, and future planning. By time 5, cumulatively, case managers continue to have higher proportions than other providers (88.9%, p=0.026), even as the proportion of family physicians reaches 50%. Similarly, at time 6, a higher proportion of case managers (44.4%) identified family and friends in comparison to other providers (p=0.049). The distribution, with a higher proportion of case manager identifiers, continues to be observed until the end of the vignette. The proportions remain the same at time 7 (increase support in IADL) and time 8 (increase support in IADL, ADL, and behavioral and psychological symptoms). By time 9 (increase support in ADL and caregiver stress), there was a small increase in the proportion of specialists (46.2%), but it does not exceed the proportion of case manager identifiers.

A significantly higher proportion of Calgary participants (41.6%) identified family and friends at time 10 (stroke and hospitalization, p=0.022). This proportion was higher than the proportion from Ottawa (0.0%; 95% CI for the difference between CAL and OTT: 13.8% to 69.6%) and 33.4% more than the proportion from Edmonton (95% CI for the difference between CAL and EDM: 1.3% to 65.3%). However, when case managers

were excluded, the differences in proportions decreased and there were only 25.0% of participants from Calgary that made identifications; the proportion in Calgary was 25.0% greater than Ottawa and only 12.5% greater than Edmonton. The majority of family and friends identifications were related to future planning at this time. By time 10, 75.0% of participants from Calgary and Edmonton, and 70.0% of participants from Ottawa had made identifications of this service category. Further, by time 10, all case managers had identified family and friends (100.0%), compared to 75.0% of family physicians and 53.8% of specialists.

There were 56.6% of case managers that identified family and friends at time 11 (transition from home to long-term care, p=0.002), which was a significantly higher proportion than specialists (7.7%; 95% CI for the difference between CM and FP: 23.1% to 88.0%) and family physicians (0.0%; 95% CI for the difference between CM and SP: 12.3% to 83.4%). However, all participants identifying family and friends at this time had previously identified it at an earlier time, i.e. no identifiers were observed. Identifications of family and friends related to future planning, however, this was the first time that identifications were related to wandering. Identifications of family and friends continue in time 12 (increase behavioral and psychological symptoms) and 13 (patient died), although, similar to time 11, from participants who have identified family and friends previously. At time 13, identifications of family and friends were specifically to support the caregiver. See tables 10 and 11 (appendix D) for the chi-square results.

In regards to the SNA results (see appendix D, figures 23 and 24), only 1 service node (node 1, family and friends) was a part of the network graphs at each time point in the vignette that formed relationships with the participant nodes. This was a very specific service category that did not encompass any other identification related to informal

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networks. This service category was identified by at least one participant at each time point in the vignette. At time 1, case managers nodes from each site formed relationships with node 1. In addition, the Edmonton family physician node also formed a relationship with node 1. At time 2 (screening results and early recognition), the Ottawa family physician node formed a relationship with the service node. At time 3 (mild cognitive impairment), the first specialist nodes were observed; new relationships were formed between the service node and the specialist nodes from Edmonton and Ottawa. Also, this was the first time that the Calgary family physician formed a relationship with the service node. By time 4 (annual follow-up), the strongest relationship was between the case managers from Edmonton with the service node. Also by this time, all type of participant nodes had formed relationships with the service node, except for the specialist from Calgary node. The relationship between the case managers from Calgary node was stronger by time 5 (diagnosis).

At time 6 (3-month follow-up), the specialists from Calgary node forms a relationship with node 1, which indicates that all participant nodes had formed a relationship with node 1 by this time, regardless of strength. Hence, no new relationships would be formed between the participant and services node for the remainder of the time points in the vignette. By time 7 (increase support in IADL), the strongest relationships were between the service node and the case mangers nodes from Calgary and Edmonton. These relationships continued to be the strongest at time 8 (increase in support with IADL, basic ADL, and behavioral and psychological symptoms) and time 9 (increase support in ADL and caregiver stress). By time 10 (stroke and hospitalization), the specialist node from Edmonton also had one of the strongest relationships with the service node. By time 13 (patient died), it was clear that the relationships between case managers (Calgary and

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Edmonton, in particular) with the service node, and Edmonton specialists with the service node, were relatively stronger than the other relationships in the network.

Overall, the log-rank test by type of provider showed that the time-to-event curves were not all the same as the test was significant (p=0.0084). However, by site, the log-rank test was not significant. See figures 25 and 26 (appendix D) for the time-to-event graphs.

3.2.3.2 The Alzheimer Society and related services

The second example of the 'education, social engagement, and social and psychological support services' type selected for inquiry was the Alzheimer Society and related service category. This service category is a collection of formal services including support groups, social networking opportunities, written informational resources, educational workshops (e.g. understanding their disease and learning what to expect), and caregiver training programs (e.g. managing behavioral challenges, avoiding crisis, and dealing with stress), which can be provided by the Alzheimer Society (among a number of other organizations). This service category was considered to be a very valuable community service for its comprehensive nature in providing local opportunities for learning about the disease, training to care for someone with dementia, coping and support services, among others, for patients with dementia, caregivers, and their families; this service category was one of the major themes that emerged from the data.

Beginning at time 1 (warning signs), 20.6% of all participants identified this service category and a significantly higher proportion of participants from Calgary (50.0%) identified this service category (p=0.007). The proportion of Calgary participants was greater than Ottawa (0.0%; 95% CI for the difference: 21.7% to 78.3%) and 41.7% greater than Edmonton (95% CI for the difference between CAL and EDM: 9.3% to 74.0%).

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However, when case managers were excluded, the difference in proportions decreased, as the proportion of identifications from Calgary participants (37.5%) was greater than Ottawa and Edmonton (0.0% each). At the same time, 44.4% of case managers identified services from this categorization compared to 15.4% of specialists and 8.3% of family physicians.

Participants commonly identified 'Alzheimer Society' (node 3) at time 1 (see SNA network graph in figure 4), and specifically, all types of providers in Calgary and an Edmonton case manager, generally for health promotion and prevention information and education. However, a specialist from Calgary identified that a referral to the Alzheimer Society "would really depend on the family, because if we are not convinced that it was dementia at that point, it depends how close I thought she was to reaching that tipping point in terms of recommending the Alzheimer Society. For someone who is really mild cognitive impairment, it'd just…increase their anxiety unnecessarily." Nevertheless, Calgary case managers and specialists commonly identified seniors' centers (node 1) for stimulation and engagement opportunities. The Calgary specialist node (CS) also formed a relationship with the 'Memory Plus Program' (node 7) and the 'Family Caregiving Center' (node 4) to increase stimulation and engagement; meanwhile, the Calgary case manager node also formed relationships with information sessions (node 11) and the 'Living Well' program (node 6) for the management of hypertension.

By time 2 (screening results and early recognition), a higher proportion of participants from Calgary identified this service category (p=0.006). The proportion of participants from Calgary (66.7%) was 56.7% higher than Ottawa (95% of the difference: 24.2% to 89.2%) and 50.0% higher than Edmonton (95% CI for the difference between CAL and EDM: 16.0% to 84.0%). When case managers were excluded, the difference in proportions remained the same when comparing Calgary and Edmonton. However, there

was a 26.8% decrease the difference in proportions between Calgary and Ottawa when case managers were excluded. Also by this time, the proportion of case managers (66.7%) identifiers was significantly higher (p=0.018) than family physician identifiers (58.4% difference CM and FP; 95% CI for the difference: 23.8% to 92.8%). A lower proportion of specialists (30.8%), compared to case manager identifiers, also identified services from this categorization at this time; the differences in proportions were not statistically significant. These observations are illustrated in figure 4, by time 2; with relatively stronger ties linking Calgary case managers (CC) and specialists (CS) to the Alzheimer Society (node 3). There was also a relatively stronger relationship between the Calgary case manager node and information session node (node 11) compared to the other participants in the network. Also by time 2, new relationships were formed between the Ottawa specialist node and service node 11.

Compared to earlier points in time, there was a steeper increase in the proportion of identifiers among all participants (50.0%) at time 3 (mild cognitive impairment). By time 3 (mild cognitive impairment), 88.89% of case managers, 61.5% of specialists, and 50.0% of family physicians identified services in this category. Further, 83.3% of participants from Calgary, 60.0% of participants from Ottawa, and 50.0% of participants of Edmonton made identifications of these services by this time. At time 3, the first identifications of 'support groups' (node 2) were observed by at least one respondent from each site (CC, EF, and OF). The Alzheimer Society (node 3) and educational workshops (node 11) continue to form relationships with the majority of the participant nodes; often, the relationships with the Alzheimer Society were for dementia information sessions. By time 3, all case managers, family physicians, and specialist nodes from all sites had formed relationships with a service node from this service category.

While an increase in the overall proportion of participants was observed by time 4 (annual follow-up) (76.5%), and all types of participants have identified the Alzheimer Society by this time, another steep increase in the proportion of identifications by participants was observed by time 5 (diagnosis, 94.1%). By time 5 (diagnosis), all case managers (100.0%), 92.3% of specialists, and 91.7% of family physicians identified at least one service in this category. By site, all Calgary participants, 91.7% of Edmonton participants, and 90.0% of Ottawa participants identified this services category. By time 5, very strong ties are observed between the Alzheimer Society (node 3) and specialists (all sites); node 3 was also strongly tied with the Calgary case manager node (CC). Further, the CC node was not only strongly tied to the Alzheimer Society and educational workshops, but it was also tied to 6 other nodes including support groups (node 2), seniors' center (node 1), Memory Plus Program (node 7), Family Caregiver Centre (node 4), Living Well (node 6), and Dealing with Dementia (node 10). The Calgary specialist node is also linked to a range of services overlapping with the CC node, namely, the Alzheimer Society (node 3), seniors' center (node 1), Memory Plus Program (node 7), and the Family Caregiver Centre (node 4).

Continuing to time 6 (3-month follow-up), however, the same participants identified services from this category (i.e. no new ones). Hence, there was no alteration to the proportion of observations by this time. All family physician physicians, case managers, Calgary participants, and Edmonton participants made identifications to this service category by time 7 (increase support in IADL). All participants, regardless of site or provider, identified this service category by time 8 (increase in support with IADL, basic ADL, and behavioral and psychological symptoms). By this time, the support group (node 2) joins the Alzheimer Society (node 3) and educational workshops (node 11) at the center

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of the network, identified by 6 out of the 9 types of respondents. The seniors' center node

was also a relatively common identification, tied to 4 out of 9 types of respondent nodes.

Services unique to Calgary were observed on the left side of the network, identified solely

by Calgary participants (all providers): Family Caregiver Centre (node 4), Kerby Centre

(node 5), Living Well (node 6), Memory Plus Program (node 7), and Dealing with

Dementia (node 10). An Edmonton specialist identified the 'Coping with Care' service

(node 9).

Services continue to be identified by participants at time 9 (increase support in

ADL and caregiver stress) to time 12 (increase in behavior and psychological symptoms),

however, at a lower overall proportion of participants compared to other time points. At

time 9, only Calgary participants (3 case managers and 1 specialist) made Alzheimer

Society and support group identifications compared to other sites (33.3% greater than

Edmonton and Ottawa; p=0.016; 95% CI for the difference: 6.7% to 60%). When case

managers were excluded, the difference in proportions decreased by 20.8%. Only 1 to 2

participants (mostly Calgary case managers and specialists) made identifications at time

points 10 (stroke and hospitalization), 11 (transition from home to long-term care), and 12

(increase in behavioral and psychological symptoms), with the Alzheimer Society (node 3)

and support groups (node 2) identified at almost at every one of them.

By time 13 (patient died), 3 services nodes were nested at the center of the

network with strong linkages to the surrounding participant nodes, which is a constant

pattern observed since time 8 (cumulatively); however, an observable division of services

by sites are also presented, with a series of service nodes tied only to Calgary nodes located

at one side of the overall network, whereas nodes from other sites lack this diversity of

linkages. These diverse, yet relatively weaker linkages, compared to the central and

commonly identified service nodes, include Catholic Family Services (node 12), Calgary

Family Services (node 8), Memory Plus Program (node 7), Family Caregiver Centre (node

4), Kerby Centre (node 5), care centers (node 13), Living Well (node 6), and Dealing with

Dementia (node 10). Support groups from the Calgary Family Services, Catholic Family

Services, and care centers were new identifications introduced at later stages of the vignette,

time 12. See tables 12 and 13 (appendix D) for the chi-square results, and figures 9 and 10

for the SNA network graph of this service category.

    The log-rank test by site showed that the time-to-event curves were not all the

same as the test was significant (p=0.0152). However, the log-rank test by type of provider

was not significant. See figures 27 and 28 (appendix D) for the time-to-event graphs for

Alzheimer Society and related services identified by location and provider.

Figure 9. Bipartite graph of Alzheimer Society-related services, identified at each time
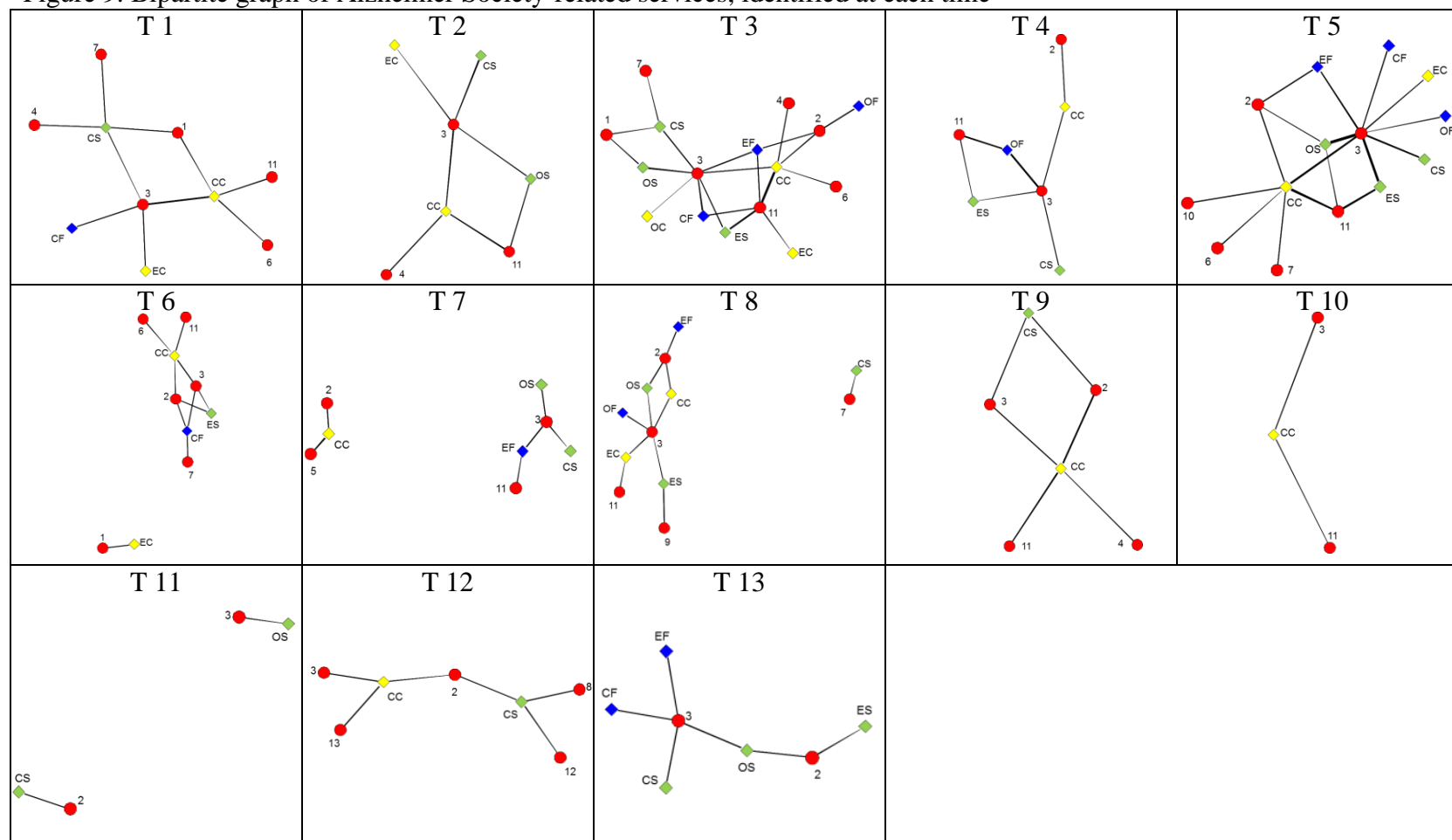
Figure 10. Bipartite graph of Alzheimer Society-related services, identified cumulatively
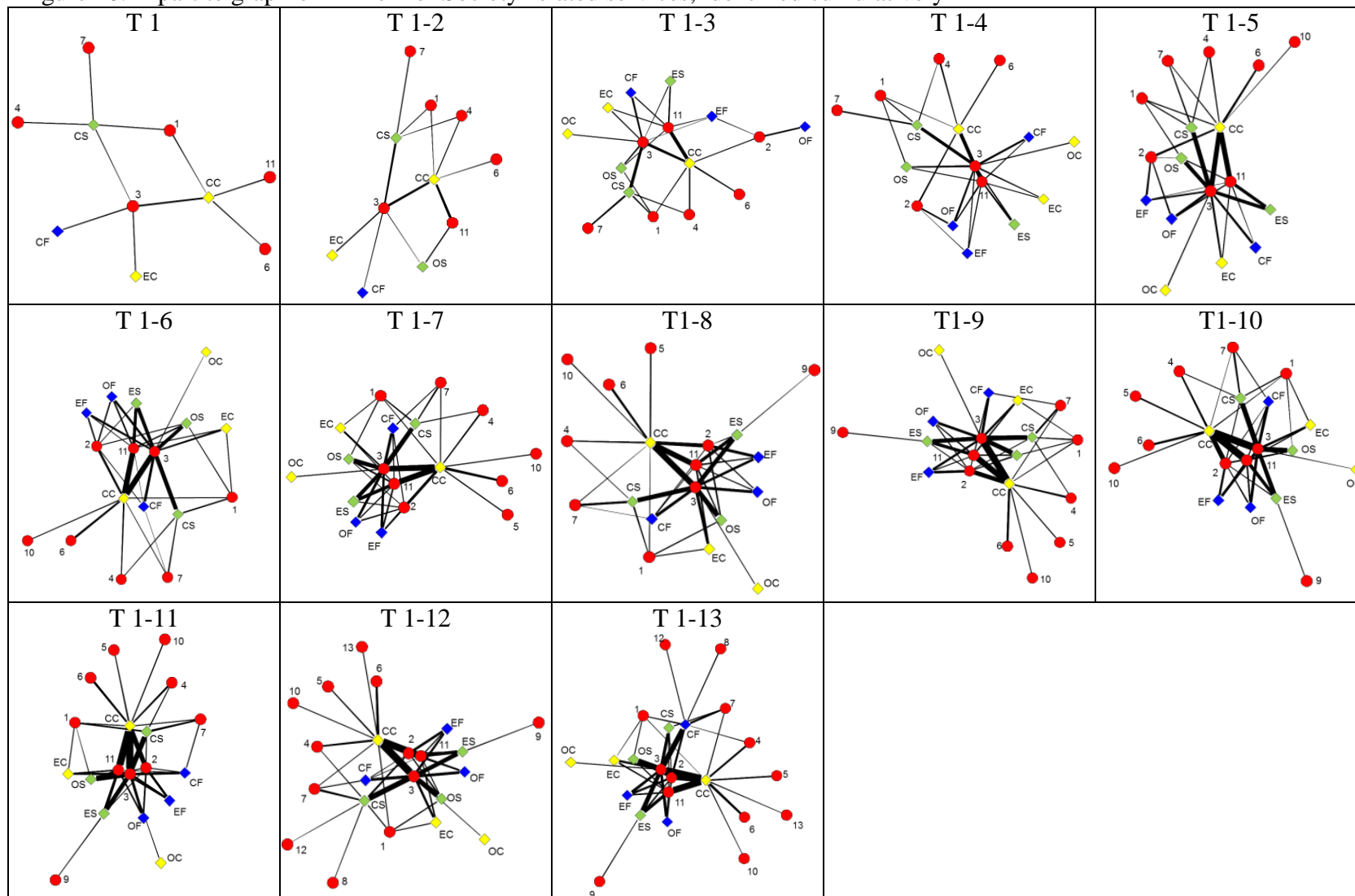
Legend for figure 9 and 10:

Node 1=Seniors' Centre

Node 2=Support groups

Node 3=Alzheimer Society

Node 4=Family Caregiver Centre

Node 5=Kerby Centre

Node 6=Living Well

Node 7=Memory Plus Program

Node 8=Calgary Family Services

Node 9=Coping with Care

Node 10=Dealing w dementia

Node 11=workshop/info session (e.g. caring with confidence at the Alzheimer society;

dementia information sessions)

Node 12=Catholic Family Services

Node 13=care centre (LTC)

3.2.4 Home care and respite services

3.2.4.1 In-home support services

Two examples of 'home care and respite services' will be presented. The first relates to in-home support services, which includes home care and in-home respite services. The in-home support service category includes meal preparation, various personal care services (e.g. bathing and incontinence support), housekeeping (e.g. cleaning), home maintenance (e.g. snow removal), medication monitoring, and companionship (e.g. in-home visitations and home sitters). This service category is important for health care policy and planning, as in-home support services are integral to maintaining quality of dementia care in the community.

The first identification of this topic was observed at time 3 (mild cognitive impairment; 2.9% of all participants or 1 Calgary case manager) and the last identification was observed at time 11 (transition from home to long-term care; 5.9% of all participants or 2 family physicians, 1 from Calgary and 1 from Edmonton). By time 4 (annual follow-up), there was an increase in the proportion of Calgary participants that identified this service category (from 8.3% of Calgary participants at time 3 to 25.0% by time 4). A relatively large increase in the number of identifiers was observed at time 5 (diagnosis), when 47.1% of all participants identified this service category. The highest proportion of identifiers were case managers (55.6%) and Calgary participants (58.3%), while the lowest proportions of identifiers were specialists (38.5%) and Ottawa participants (30.0%). No changes were observed by time 6 (3-month follow-up). By time 7 (increase support with IADL), 70.6% of all participants identified this service category; more case managers (88.9%) and family physicians (75.0%) identified this service category compared to specialists (53.9%). Also by this time, the proportion of participants from Calgary (83.3%) exceeded the proportion

of participants observed in Edmonton (66.7%) and Ottawa (60.0%), however, the differences in proportions were not statistically different.

Differences in the proportions of identifiers were observed at time 8 (increase support in IADL, ADL, and behavioral and psychological symptoms) when participants were compared across the types of providers ($p<0.001$); there was a greater proportion of case manager identifiers (77.8%) than family physician identifiers (16.7%; 95% CI for the difference between CM and FP: 26.7% to 95.5%) and specialist identifiers (0.0%; 95% CI for the difference between CM and SP: 50.6% to 100%). By time 8, all case managers had identified a home care or in-home respite care service; this proportion was greater than the proportion of specialist identifiers (53.9%, $p=0.034$; 95% CI for the difference between CM and SP: 19.1% to 73.3%). By time 9 (increase support in ADL and caregiver stress), there was a small increase in the proportion of specialist (61.5%) and Ottawa identifiers (70.0%). By time 10 (stroke and hospitalization), there was still an increase in the proportion of specialists from Calgary (100.0%) and Ottawa (90.0%) that identified this service category, while the lowest proportion of identifiers were from Edmonton (75.0%). No new identifications were observed from time 10 to the end of the vignette. See tables 14 and 15 (appendix D) for the chi-square results of in-home support services identified at each time and cumulatively.

In regards to SNA pertaining to specific examples of services in each service category (figures 11 and 12), in-home respite care was the easiest and one of the latest identifications of this service category (observed between times 3 and 11). The first identification was at time 3 (mild cognitive impairment), by a Calgary case manager, which referred to the 'Calgary Seniors' Resource Society' (node 11) for in-home visitations. Similar identifications include 'Companion Care' (node 14) and 'in-home respite' (node

15) from Home Care identified by Calgary and Edmonton participants between times 4 (annual follow-up) and 9 (increase support in ADL and caregiver stress). An Ottawa family physician identified 'Sitters' (node 12) from the CCAC at time 5 (diagnosis). Also, participants in Edmonton made nonspecific in-home respite care identifications such as 'volunteer services' for companionship (node 16 at time 7, increase support in IADL) and 'hire a companion' (node 13 at time 11, transition from home to long-term care).

In relation to meal support services, at least one representative from each type of respondent identified the 'Meals on Wheels' service (node 4), a common service across all sites and providers, particularly from times 4 (annual follow-up) to 7 (increase support in IADL). Overall, participants in Calgary and Edmonton identified 'Home Care' (node 3) as a resource for helping with food preparation at times 5 (diagnosis), 7 (increase support in IADL), and 8 (increase in support with IADL, basic ADL, and behavioral and psychological symptoms). Edmonton participants identified the 'Seniors Association for Greater Edmonton' (SAGE, node 7) for meals services and homemaking services at times 5 and 7. Other meal preparation identifications were nonspecific and were made sometime between times 5 and 7 as well: 'get meal options' (node 1 at time 5), 'have meals brought in' (node 2 at time 7), 'microwaveable foods' (node 5 at time 7), and documents such as 'Need Help Getting Food' and 'Yellow Pages' for seeking private meal preparation services (node 6 at time 7).

In relation to medication monitoring, it was identified as a Home Care service (node 39) by all type of participants in Calgary and Edmonton between times 5 (diagnosis) to 7 (increase support in IADL). There were no services specific to medication monitoring observed by participants in Ottawa.

Support services identified for house cleaning and home maintenance were observed between times 5 (diagnosis) and 9 (increase support in ADL and caregiver stress). These specific support services included the 'Abbotsford House' (node 31) and 'Rideau [Community] Support [Services]' (node 37) at time 9 by Ottawa case managers, 'We Care' (node 38 at time 5) and 'community associations' (node 32 at time 7) by Calgary family physicians, 'Department of Veteran Affairs' (node 33 at time 5) by Calgary case managers and specialists, 'Kerby Centre' (node 36 at time 7) by Calgary case managers and family physicians, and 'Home Care' (node 35 at times 4, 5, and 7) by all types of Calgary participants and Edmonton specialists.

Family physicians and specialists identified support for incontinence (node 10, e.g. education and coping strategies) at times 9 (increase support in ADL and caregiver stress) and 10 (stroke and hospitalization) by physicians from each location and Edmonton case managers. A specialist from Ottawa identified a 'Geriatric rehab[ilitation] program' (node 8 at time 10), which may help with the patient's incontinence among other issues. A specialist in Calgary identified 'Home Care' (node 9 at time 9 by Calgary case managers) to provide incontinence garments.

Personal care (e.g. bathing assistance) included services provided by 'Personal Support Workers' (node 27 at times 7 and 8) by case managers from all locations, and 'Home Care' (node 24 at times 5, 7, 8, and 9) by all professional types from Calgary and case managers and specialists from Edmonton. Private care agencies for home services that were identified included 'Capital care' (node 17), 'Home Instead' (node 25), and 'Retire-at-home' (node 29) at time 9 by Ottawa case managers; 'Classic Comfort' (node 20 at time 5) by Calgary case managers; 'Comfort Keepers' (node 22 at time 5 and 9) by case managers from Calgary and Ottawa; and 'self-managed care' (node 30 at time 9) by Edmonton case

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managers. Further, private services such as 'live-in care' (node 26 at time 9) by Ottawa specialists), private services accessible through the 'CCAC' (node 18 at time 7) by Ottawa family physicians, and 'private nursing care' (node 28 at time 11) by Calgary family physicians were also identified. These identifications relating to personal care were observed between times 5 to 11.

Overall, a relatively high proportion of participants identified in-home support services at time points 5, 7, and 9. In-home respite, meal preparation, medication monitoring, and home maintenance were frequently identified at times 5 and 7. Personal care and incontinence support services were frequently identified at time 9. This is illustrated in figure 10 with an observable increase in the number of participant nodes and relationships with in-home support service nodes at those key time points. When examining the cumulative bipartite graph by time 13, Calgary and Edmonton participants often form relationships with similar services, which are typically with Home Care-specific services. Also, relationships between Calgary and Edmonton participants with Home Care-specific services (e.g. Home Care services specific to personal care and companion care) are relatively stronger than their relationships with other services. Meanwhile, the relationships that Ottawa participants form with services are generally unique and are not common to other participant types.

The log-rank tests for the time-to-event curves by type of provider or site were not significant. See appendix D, figures 29 and 30, for the time-to-event graphs.

Figure 11. Bipartite graph of in-home support services, identified at each time
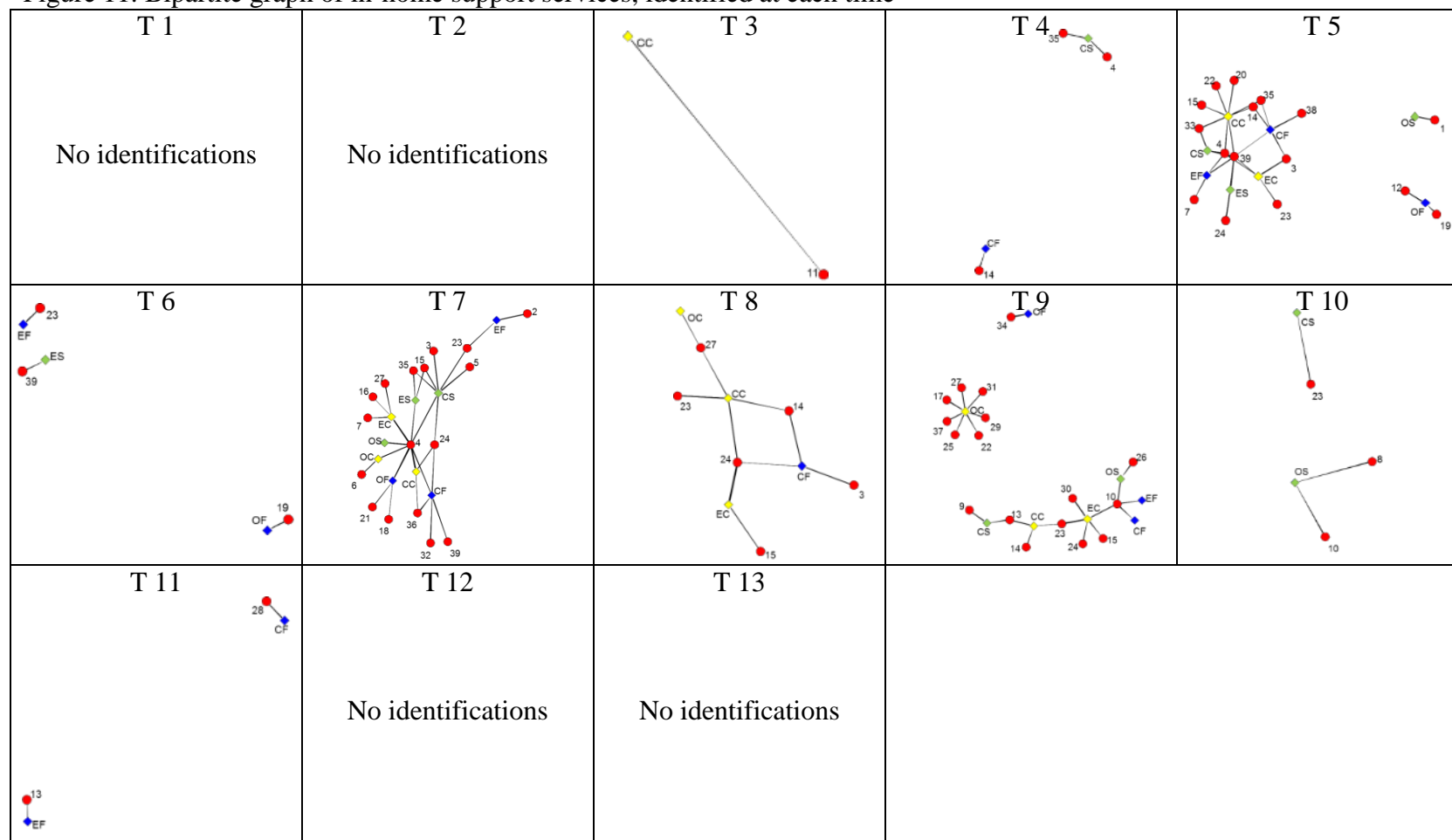
Figure 12. Bipartite graph of in-home support services, identified cumulatively
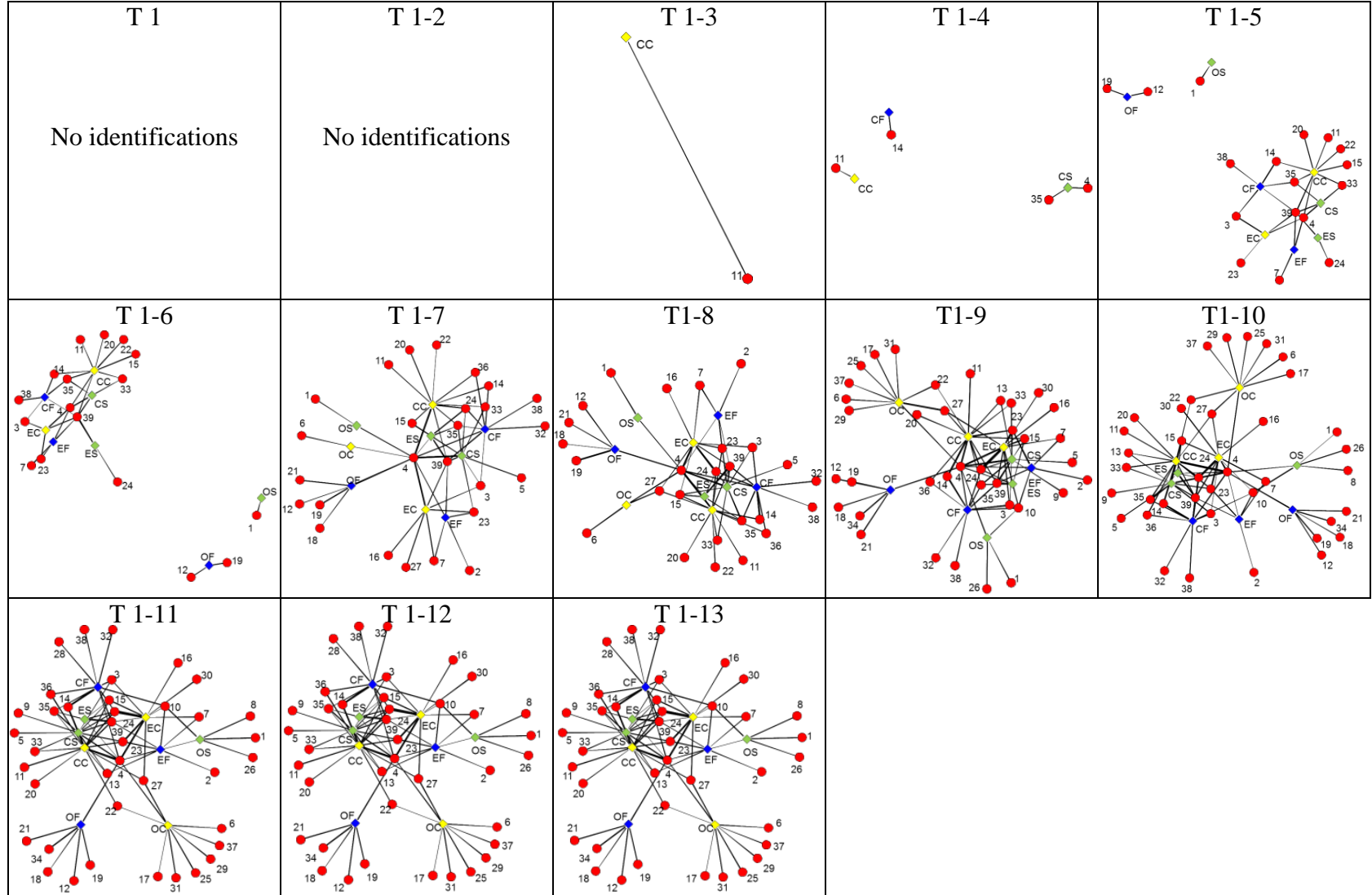
Legend for figure 11 and 12:

Node 1=get meal options

Node 2=have meals brought in

Node 3=Home Care help with food

Node 4=Meals on Wheels

Node 5=microwaveable foods

Node 6=private meal preparation services, identified from Need Help getting food book or

Yellow Pages

Node 7=Senior Association of Greater Edmonton

Node 8=Geriatric rehab program would help with incontinence

Node 9=Home Care providing incontinence garments

Node 10=incontinence products, other strategies

Node 11=Calgary Seniors' Resource Society, in-home visitation

Node 12=CCAC, for sitters

Node 13=hire a companion

Node 14=Home Care Companion care

Node 15=Home Care in-home respite

Node 16=volunteer services, for companion

Node 17=Capital Care

Node 18=CCAC for private home services

Node 19=CCAC home services

Node 20=Classic Comfort

Node 21=community resources for home help (e.g. showering)

Node 22=Elder Care (Comfort Keepers)

Node 23=Home Care

Node 24=Home care personal care (e.g. bath assistance)

Node 25=Home Instead

Node 26=live-in care

Node 27=Personal Support Worker

Node 28=private nursing care

Node 29=Retire-at-Home

Node 30=self-managed care

Node 31=Abbotsford House

Node 32=community associations

Node 33=Department of Veteran Affairs

Node 34=hire help with dressing, cleaning, cooking

Node 35=Home Care for housekeeping/homemaking

Node 36=Kerby Centre

Node 37=Rideau Community Support Services

Node 38=We Care

Node 39=Home Care medication monitoring

3.2.4.2 Day program services

The second example of the 'home care and respite services' is the day program service category. Day program services are integral to dementia care in the community as they generally provide socialization for people with dementia and respite for their caregivers.

The first identification of day programs was observed at time 3 (mild cognitive impairment; 8.8% of all participants or 2 case managers and 1 family physician) and the last were observed at time 11 (transition from home to long-term care; 5.9% of all participants or 1 family physician and 1 specialist). One case manager from Ottawa identified these services at time 4 (annual follow-up). The highest proportion of participants that made identifications was at time 5 (diagnosis), when 47.1% of all participants identified these services. Observations from Ottawa (61.5%) and Calgary (55.6%) were more than double the proportion of observations from Edmonton (25.0%) at time 5. The proportion of participants that made identifications of this service category decreased slightly after time 5. There were 32.4% of all participants that made identifications at time 6 (3-month follow-up), 14.7% at time 7 (increase support with IADL), 32.4% at time 8 (increase support in IADL, ADL, and behavioral and psychological symptoms), and 29.4% at time 9 (increase support in ADL and caregiver stress).

By time 9, 85.3% of the participants had identified a day program at least once. A statistically significant difference among sites was observed by time 9 (p=0.023), as all the participants from Calgary (100.0%) identified a day program in comparison to 60.0% in Ottawa (95% CI for the difference: 9.6% to 70.4%). When case managers were excluded, the difference in proportions between Calgary and Ottawa increased slightly from 40.0% to 44.5%. Similar to the proportion of participants that made identifications from Calgary, the

proportion of participants from Edmonton was also relatively high (91.7%). Also by time 9, 100% of case managers, 84.6% of specialists, and 75.0% of family physicians had identified a day program; however, the differences were not statistically significant. Cumulatively, no changes were subsequently observed. See tables 16 and 17, appendix D, for the chi-square results.

Specific day programs identified include the 'adult day support program' (ADSP), 'Dealing with Dementia', and 'Club 36' (identified by participants in Calgary); 'Comprehensive Home Option of Integrated Care' (CHOICE) and 'St Michael's' Long Term Care Centre (identified by participants in Edmonton); 'Centre D'Accueil Champlain', 'Centre de Services Guigues', and 'Residence St-Louis' (identified by a respondent in Ottawa). On the network maps (see appendix D, figures 31 and 32), the specific day programs are located on the periphery of the network and grouped together by site. The thick and short linkages between day programs (general) and the types of participants demonstrate high proportions of identifications, in particular, by case managers and specialists in Edmonton and Calgary, and specialists in Ottawa.

Log-rank tests of the time-to-event curves across providers and sites were not different, as the tests were not statistically significant. See appendix D, figures 33 and 34, for the time-to-event graphs.

Chapter 4: Discussion

4.1 Discussion of methods

The following section is a discussion of the advantages and limitations to the use of vignette and SNA methods in assessing service provision of dementia care.

4.1.1 Vignette and social network analysis methods

To understand the organizational context of dementia-related service provision, a standardized assessment procedure using a vignette was adopted. The vignette used in this study was developed to represent a typical case of a patient with dementia and her caregiver, identifying critical stress points and the appropriate care needed throughout the trajectory of the disease.

Vignettes are used in research as data collection tools to evaluate one's responses to questions based on brief descriptions of a hypothetical scenario derived from real life situations (67). Vignettes have been used in a number of research studies for calibration purposes, cross-population comparisons, and for measuring attitudes, beliefs, and actions relating to health and illness (68–70)(67–74). In the area of dementia care, for example, vignettes have been used to describe the awareness of health and support services for dementia care among older adults in Ontario (72).

The benefits of using vignettes include the flexibility to develop an instrument relevant to one's topic of interest (73), identify how participants reflect on their practice (74), and provide a time and cost-saving method to collect information from a large sample of participants at the same time (67). It is also a method of data collection that addresses limitations reported on direct observations, which include the Hawthorne Effect (i.e. modifications to usual behavior when participants are aware that they are being observed), ethical difficulties (e.g. issues relating to the invasion of privacy), and inconsistencies in the

data that is collected (e.g. the information cannot be standardized as it is collected from a variety of situations) (67). By using a vignette, it is possible to control for extraneous variables, as all participants respond to identical situations and questions posed at each stage of the vignette. However, it is difficult to establish reliability and validity (i.e. internal and external validity) when using vignettes (59,67).

The internal validity of a vignette is established by ensuring that the case study represents real life experiences in relation to the topic of interest (e.g. community services), and that each question measures that topic (67). It can be established by developing the content from existing literature or case histories of patients with dementia, involvement of an expert panel for review, and pre-testing the questions to ensure clarity (75). This process of establishing internal validity was generally followed; Dalziel, having extensive clinical and research experience relevant to people with dementia and their caregivers developed the vignette and other experts from a working group reviewed it and ensured that its contents were valid.

The external validity of a vignette is the extent to which participants would behave similarly in circumstances beyond the contents outlined in the vignette (67). As the vignette only portrays one specific scenario (despite it being 'typical'), it is difficult to establish the external validity of vignettes (76). People with dementia and their caregivers have their own personal histories and individual experiences with the disease, which affects the way health care professionals provide support for their patients. One way of measuring externality validity is to follow actual encounters of health care professionals of real patients with dementia and their caregivers. The actions and community resources identified could be compared with their responses to the vignette, which could help determine the extent to which the vignette has external validity. However, this process

could be complicated, as the sample of participants could be small, encounters with patients with dementia could be under reported, and the written accounts of the actions and community resources identified are likely to lack the detail required for a meaningful comparison of the responses with the vignette. Nevertheless, this method of establishing external validity has demonstrated to be useful and is recommended in future studies to validate the vignette examined in this study (76). The reliability and validity of the measures are further discussed in section 4.3.

A novel approach was used in the study of dementia-related care services by integrating vignette and SNA methods. Typically, SNA studies use network data collected at a single point in time (47), which does not fully capture the dynamic and evolving nature of inter-organizational relationships, such as those at different stages of a disease trajectory. By interviewing health care practitioners with a standard vignette, it provided a valuable opportunity to systematically collect longitudinal data about the network of services available to provide care for a person with dementia. The interview data obtained from open-ended questions were transformed into relational data, which resulted in networks that were not bounded by a predetermined or list of organizations. Contrary to traditional applications of SNA (77), the unbounded network data (use of open-ended questions, data not derived from a list of predetermined organizations) used in this study was arguably more representative of interactions in a real clinical practice setting than bounded network data (data derived from a list of predetermined organizations), which makes the unbounded network data a unique and more appropriate data set in addressing my research questions.

SNA is advantageous for studying the way in which people interact with one another. In relation to the care of the elderly, SNA has been advocated to be a useful tool for understanding how an elderly person interacts with their significant others and agencies

that provide support over time (78). This information provides insight to the availability of formal and informal support, particularly during times of crisis, which is valuable for identifying areas of intervention. An approach to SNA in the care of the elderly has been proposed for assessing interpersonal relationships (e.g. family and friends), participation in organized settings (e.g. work), and necessary services (e.g. health and social services) (78). Hence, SNA can be useful for identifying the needs of the elderly over time, which can inform policy and program development (78).

For example, SNA has been demonstrated to be useful in examining social relationships and admission into long-term care among the elderly. A study examined the impact of social networks on the use of long-term care facilities, which are primarily used by older populations (79). They found that higher network measures of density (degree to which people in a network are connected to one another), intensity (a measure of relationship strength), and reciprocity (extent of resource exchange in a relationship) indicate a stronger social network and delay admissions into long-term care. On the other hand, those with weaker network measures of density, intensity, and reciprocity tend to be admitted into long-term care earlier as their social network is not able to support them in the community.

SNA has been used extensively in the analysis of inter-organizational networks and has been used to examine patterns in which health care is being delivered (65). SNA of health care services assumes that inter-organizational relationships and patterns of resource exchange provides valuable information on service delivery, particular to service coordination and integration (49). For example, SNA has been used in evaluating the perceived effectiveness of research networks composed of governmental and non-governmental organizations (53). These research networks were specific to dementia care

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and were developed to increase coordination and integration of community services in Ontario. The network structure and types of resources exchanges among network agencies were also assessed. One finding from the study was that relationships between cliques, which are members of a network that are connected to each other and not directly connected to other members of a network, might be more critical than relationships between all members of a network in determining efficiency of research networks. Nevertheless, there is limited research in the field of inter-organizational network analysis relating to the elderly and specific to dementia care.

A limitation to using SNA in this study is the uncertainty of collecting the most objective or precise data, and issues have been reported on the accuracy and reliability of self-reported data (77). Nevertheless, there is evidence of a positive correlation between perceived connectivity from self-reported data and actual connectivity from direct observations. This correlation was particularly evident for institutionalized relationships among organizations (47). Compared to interpersonal networks (e.g. friendships), over time, institutionalized relationships are less dynamic and rather routine, which increases the response reliability and likelihood that respondents could accurately recall such relationships (77). In other words, although systematic errors (e.g. due to measurement bias from self-reported data) can occur in inter-organizational network studies (49), they are less likely to have systematic errors than interpersonal network studies (77). Hence, data from perceived connectivity (such as the work in this study) are commonly used, particularly for large networks of inter-organizational relationships. Further, data about perceived connectivity are more feasible to obtain (e.g. in terms of time and cost) in comparison to more direct observations of relationships (77).

In addition to developing the bipartite graphs, calculating measures of network characteristics would further develop the utility of this network data and provide a more in-depth analysis of organizations with varying levels of influence. SNA of dementia-related care services could provide stakeholders, such as policymakers, with insight for strengthening collaboration strategies between organizations and inform the development of more effective and collaborative dementia care services (47). Utilizing support from a variety of resources, particularly the increased use of peripheral resources, can lighten the burden for central resources, increase collaboration, and decrease fragmentation issues between organizations at the local level. Future research would be beneficial in exploring the role of key coordinating and comprehensive organizations (governmental and non-governmental) such as CCAC, Home Care, and local Alzheimer societies across the country on various network measures such as centrality and connectivity for dementia-related care.

In general, the vignette method can be a useful means of calibrating health care services and SNA methods can provide clear and dynamic visual representations of inter-organizational relations. This paper reports on a unique form of data collection and analysis of dementia-related care services and contributes to the SNA methodology, an evolving science and way of knowing. Further, this paper contributes to the variety of methods in SNA for measuring and analyzing inter-organizational networks (49).

4.2 Discussion of findings

In this section, the assumptions associated with the use of service 'identifications' that were the basis for this analysis will be discussed. Then, service categorizations that were developed from the data and were important in the care of people with dementia will be discussed. These service categories will be discussed in relation to

the CCCDTD (19) clinical recommendations, specifically regarding events and time points in the disease trajectory that services should most appropriately be accessed. Finally, the third research question will be addressed to consider the implications of these findings for dementia-related service delivery, health policy, and planning.

4.2.1 Assumptions associated with the identification of services

In this study, the concept of 'identifications' of services was adopted as the basis for the analysis. The study was based on interview data in which service providers discussed their probable management of the hypothetical 'case' contained in the vignette. Mentioning of a service constitutes a type of identification for the purposes of this analysis. Adopting this approach requires a number of assumptions. Firstly, identifications observed in this study are assumed not to be random and are considered to have clinical meaning and relevance. Identifications are based on the participants' clinical judgment, which informed their decision-making when responding to the vignette and identifying particular services as treatment modalities.

There are several possible explanations for the identification of a particular service. The identification could suggest that a respondent was aware of and had knowledge about the service they identified, and deemed the service to be appropriate and useful for the person with dementia and her caregiver at the observed point in time. On the other hand, if the respondent did not identify a service at any point in time during the vignette, it is possible that the respondent was not aware of the service. However, there are also other possible explanations. The following possibilities could explain why a participant did not identify a particular service: 1) they were not aware of it; 2) they were aware of the service but forgot to identify it; or 3) they were aware of the service and choose not to identify it due to various reasons. In the latter case, respondents could be aware of the service but

choose not to identify it because: 3a) they did not deem the identification of the service to be appropriate in their professional role (e.g. considered the particular service identification to be the responsibility of another health care provider); 3b) they consider the identification of the service to be unnecessary as the patient-caregiver pair likely already knows, uses, and has easy access to the service (i.e. the service was available and easily accessible, and hence identifying the service was not a priority); or 3c) they consider the identification of the service to be unnecessary and the patient-caregiver pair does not need to receive it. The information available from the interview data was not sufficient for differentiating the reasons underpinning participant responses or lack thereof, which warrants further investigation.

4.2.2 Medical assessment, treatment, and care management

4.2.2.1 Structural neuroimaging services

The CCCDTD (19) states that there is fair evidence to support the selective use of CT or MRI scanning in the work-up for dementia, as long as 1 or more of the criteria are present (19). A relevant criterion for the patient in the vignette was rapid unexplained decline in cognition or function. The suggested time to identify the use of structural neuroimaging for the diagnosis of dementia was time 5 (diagnosis). Hence, identifications between times 1 and 4 (annual follow-up), would be inappropriate. By time 4, 41.2% of all participants identified imaging of the head. The proportion of participants from Ottawa that identified structural neuroimaging was 80.0%; this was 65.0% higher than the proportion of participants from Edmonton and 56.7% higher than the proportion of participants from Calgary (p=0.009). The majority of participants who identified structural neuroimaging by time 4 were physicians. Also by this time, 66.7% of family physicians identified structural neuroimaging, which was 55.6% greater than the proportion of case managers (p=0.037).

At the appropriate time of identifying this service (time 5), only 8.8% of participants did (1 participant from each site, 2 specialists and 1 case manager). This finding is consistent with the existing literature, which suggests that CT is used inappropriately by the family physician profession (80) and by clinicians in Ontario (81).

4.2.2.2 Depression-related services

According to the recommendations, depressive symptoms are common in people with dementia, with many overlapping symptoms (e.g. social withdrawal and irritable behavior) (82). The earliest identification of depression should be at time 1, the first description of the patient with depressive symptoms. The latest suggested identification of depression should be at time 12 (increased behavioral and psychological symptoms), the last description of depressive symptoms in the vignette. By the latest suggested time and within the suggested time-period, 80.0% of participants from Ottawa that identified this service category was 55.0% higher than the proportion of participants from Calgary and 38.3% higher than the proportion of participants from Edmonton (p=0.033). In relation to the type of health care provider, 76.9% of specialists identified this service category, which was 65.8% higher than the proportion of case managers that made identifications by the latest suggested time (p=0.009). Less than half the proportion of family physicians (41.7%) identified these services by the latest suggested time. These findings suggest that specialists, particularly participants from Ottawa, generally take responsibility for the identification and treatment of depression and that it is generally not within the scope of case managers. More attention to this service category is required from family physicians, particularly among participants in Calgary and Edmonton, as the CCCDTD (19) indicates that family physicians have a key role in the diagnosis and treatment of patients presented with depressive symptoms.

4.2.2.3 Delirium-related services

Delirium is an acute state of confusion that affects one's attention and cognition (83) due to a variety of different factors such as medical illness, medications with toxic effects, and environmental stressors (84). Disturbances in behaviors at home or in the hospital could be attributable to delirium, which negatively affects the prognosis of dementia (85). Delirium is common in patients with dementia, ranging from 22% to 89% of adults 65 and older with dementia that are hospitalized or in the community (86).

This service category should be identified at time 1 (warning signs) to establish a baseline status (83) and to rule out possible causes of cognitive changes experienced by the patient in the vignette. Very few participants in this study identified these services at time 1. Only participants from Calgary (8.3%) and Edmonton (16.7%) did. By the type of provider, only family physicians (16.7%) and case managers (11.1%) identified these services at that time. The CCCDTD (19) recommend physicians assess for delirium when patients with dementia are hospitalized, which corresponds to time 10 (stroke and hospitalization) in the vignette. At time 10, the proportion of participants who identified these services increased from time 1, but the proportions were not relatively high by site (58.3% in Calgary, 41.7% in Edmonton, and 30.0% in Ottawa) or by the type of provider (53.9% of specialists, 41.7% of family physicians, and 33.3% of case managers). By the latest suggested time to identify these services, time 12 (increase in behavior and psychological symptoms), 75.0% of participants in Calgary, 60.0% in Ottawa, and 50.0% in Edmonton had done so. By the type of provider, 76.9% of specialists, 58.3% of family physicians, and 44.4% of case managers identified these services by the latest suggested time.

These findings suggest that case managers may have small role to play in the identification and treatment of delirium. The findings also indicate that improvements are necessary among physicians, both family physicians and specialists, to identify delirium among patients with dementia. In relation to site, the findings suggest that there is no difference in the provision of delirium assessment and treatment services. Future research is necessary to develop strategies for clinicians to routinely screen for delirium throughout the stages of dementia including admissions into the hospital, such as bedside instruments that can support the screening of delirium in the hospital (87). Although delirium should be routinely screened in the hospital by clinicians, studies have also reported that few patients with delirium in the hospital are diagnosed by their physicians (88).

4.2.3 Future planning and related services

Future planning and related services support the thinking and planning of one's financial and medical wishes. According to the CCCDTD (19), family physicians should be knowledgeable of future planning and related processes, including their professional responsibilities, relating to the patient's informed consent, assessment of capacity, and assignment of a surrogate decision-maker. Patients should be encouraged to make and update their will and make preparations for an advance directive and enduring power of attorney.

The results showed that Calgary and Edmonton participants commonly identified 'personal directives' and the 'power of attorney' in relation to future planning and related services. In Alberta, personal directives are legally binding documents that allow individuals to express their aims of health care, while the enduring power of attorney documents allows individuals to express their wishes in relation to financial matters. Participants from Alberta also identified 'goals of care' designations, which also provides

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health care practitioners with information on one's wishes regarding their general aims of health care (e.g. resuscitative care, less intensive medical care, or comfort care and pain management) (89). Meanwhile, participants from Ottawa only identified the power of attorney, which reflects the legislative differences between provinces. In Ontario, the power of attorney (i.e. power of attorney for personal care and the continuing power of attorney for property) allows one to appoint a surrogate decision-maker in regards to both their medical care and financial wishes (90).

Patients have expressed that they would like to have a discussion on future planning with their family physicians and that it was the physician's responsibility to raise the topic, preferably at an earlier time when they are healthy and before they are extremely ill (91). Hence, physicians should discuss future planning with their patients and their family members as early as possible while their patients retain decision-making capacity, particularly upon diagnosis. The earliest suggested time to identify this service category in the vignette is time 1. At the latest, health care providers should discuss these matters between the mild to moderate stages of dementia, prior to the patient losing their decision making capacity (92); in the vignette, this latest suggested time correlates to time 8 (increase support in IADL, ADL, and behavioral and psychological symptoms). Over 60% of all participants identified future planning and related issues by the latest suggested time point in the vignette.

By site, Calgary performed significantly better than Edmonton and Ottawa (p=0.012) within the suggested time-period; over 90% of participants from Calgary identified this service category, which was 61.7% higher than the proportion of participants from Ottawa and 41.7% greater than the proportion of participants from Edmonton. By the type of provider, case managers (77.8%) and specialist (69.2%) performed better than

family physicians (41.7%), but the differences in proportions were not statistically significant. A similar distribution was observed by the time of diagnosis, the recommended time to discuss future planning and related issues according to the CCCDTD (19). After time 8 (between times 9 and 13), the initiation of future planning would likely be too late and inappropriate and was observed in 11.8% of the participants.

Compared to other sites, Ottawa had a lower proportion of participants that identified future planning within the suggested time-period. In fact, the majority of participants that did not identify future planning in Ottawa were family physicians. Previous research indicated that family physicians would like to have the discussion regarding advance directives at a relatively later time point (e.g. later stage of the disease trajectory) than that suggested by the patients (91). In Ontario, there is evidence to suggest that family physicians seldom use advance directives; and of those that would offer advance directives to their patients, they are more likely to be terminally or chronically ill (93). Some reasons why physicians may postpone the initiation of discussions on advance directives may be due to their discomfort in raising the topic (94), perceived prerequisite to develop a more intimate relationship with the patient before raising the topic, and fear of jeopardizing their patient's hope (95). These findings suggest that family physicians need to be educated on patient preferences in order to improve the timing and frequency of discussions relating to future planning and related support services. This is particularly important, as discussions of advance directives raised by family physicians increase patient satisfaction (96) and are more effective than patient education in increasing the use of advance directives (91).

4.2.4 Education, social engagement, and social and psychological support services

4.2.4.1 Informal support networks

It is important to involve family and friends to support patients with dementia and their caregivers. Support from other family and friends can provide caregivers with the necessary respite to improve caregiver health and allow the patient with dementia to continue to live at home. According to the CCCDTD (19) recommendations, clinicians have responsibility in encouraging family members to share the caregiving role. Hence, at the latest suggested time, support from family and friends should be identified by time 9 (increase support in ADL and caregiver stress), while the patient is still living at home.

By the latest suggested time, 88.9% of case managers had identified informal social support networks, which was 42.7% greater than the proportion of specialists and 22.2% greater than the proportion of family physicians. Although the chi-square test was not statistically significant by this time, the overall time-to-event curves were different as the log-rank test by the type of provider was statistically significant. By site, higher proportions of participants from Edmonton (75.0%) and Ottawa (70.0%) identified this service category in comparison to Calgary (50.0%); the proportions were not statistically different. These findings suggest case managers play an important role in the mobilization of informal social support networks. These findings also suggest that further efforts are necessary for family physicians to acknowledge and fulfill their role as facilitators to encourage the involvement of family and friends in caring for those with dementia living in the community (24).

4.2.4.2 The Alzheimer Society and related services

According to the CCCDTD (19), family physicians should be aware and make appropriate referrals to the Alzheimer Society and related services and resources in their

communities. Patients and their families should be referred to their local chapter of the

Alzheimer Society or other comprehensive support programs at time 1 for the purposes of

health prevention and promotion (97) and for support specific to dementia upon diagnosis

(98). Support groups, for example, have reportedly been a venue for patients with early

stages of dementia to address their emotions, share their experiences, and cope with their

diagnosis (99). Caregiver stress was reported in the vignette and while the patient was still

living at home; hence time 9 (increase support in ADL and caregiver stress) is the latest

suggested time to identify this service category.

By the latest suggested time and within the suggested time-period, all

participants identified this service category, regardless of site or provider. The distribution

was similar by the time of diagnosis, the recommended time of referral by the CCCDTD

(19). However, the overall time-to-event curves by site were not the same, as the log-rank

test was statistically significant (p=0.0152). This finding suggests that family physicians,

specialists, and case managers, regardless of location, demonstrate appropriate adherence to

the CCCDTD (19) guidelines in identifying services relating to the Alzheimer Society and

other formal services offering educational workshops and support groups. However,

Calgary participants identified this service category earlier in the vignette than Edmonton

and Ottawa participants, e.g. 75% of Calgary participants identified this service category by

time 2, while it takes 2 additional time points for Edmonton and 3 additional time points for

Ottawa to reach the same level of identification among participants. Identifications by

Calgary participants at times 1 and 2 were mainly from case managers, which identified

this service category in relation to health promotion and prevention, e.g. information

sessions and reading material.

The Alzheimer Society is a comprehensive service provider that can provide support with non-pharmacological management of dementia throughout the disease trajectory, and is generally offered without cost across 150 locations in Canada (100). This finding confirms that the Alzheimer Society is an integral component in the management of dementia, bridging access to local resources, and is especially necessary given the time constraints that family physicians and specialists function within during clinical visits to support and educate their patients and family caregivers (100). The Alzheimer Society also reportedly plays a major role in increasing public awareness about dementia, reducing associated stigma, and providing patients and their caregivers with educational and similar support services (101). Although more evidence is required to determine the effectiveness of interventions aimed at providing training and education to caregivers (102), collaboration in the management of dementia between health professionals and community services such as the Alzheimer Society arguably offers benefits to the patient-caregiver pair (100).

4.2.5 Home care and respite services

4.2.5.1 In-home support services

In Canada, up to 90% of in-home care is provided by family caregivers for people with dementia (27). In-home support services are cost-effective (103) and help people with dementia stay at home as long as it is possible. The CCCDTD (19) indicated that family physicians should be aware and recruit community services to help share the caregiving of those with mild to moderate stages of dementia, which includes being informed about local home care programs that can provide support with personal care, respite, management of medications, and information about other additional community services.

Various types of organizations including non-profit, governmental, and private

entities, were identified to provide these services. Non-profit organizations included Meals

on Wheels (prepares, packages, and delivers meals to people in each of the study locations)

(104–106), Seniors Association of Greater Edmonton (provides a variety of services

including homemaking and meal services) (107), Calgary Seniors' Resource Society

(provides various support from outreach workers such as in-home visitations) (108), Kerby

Centre (provides support for home maintenance and food preparation among others in

Calgary) (109), Abbotsford House (provides seniors outreach services in Ottawa) (110),

and Rideau seniors support (provides home maintenance among others in Ottawa) (111).

Government programs identified included the CCAC (a provincial program that

coordinates community services such as home care services in Ottawa) (112), Home Care

(a provincial program that provides services such as personal care, homemaking,

medication monitoring, and in-home respite in Alberta) (113), and Veterans Affairs Canada

(a federal government program that provides a Veterans Independence Program for

veterans needing financial assistance for home maintenance and housekeeping among

others) (114). Some private agencies that were identified included Capital Care (provides

home care in Ottawa), Comfort Keepers (provides in-home respite among other services in

Calgary) (115), and We Care (provides home making services and medication monitoring

among other services in Calgary) (116).

Based on the vignette, the earliest suggested time to identify services relating to

home care and in-home respite was at diagnosis (time 5), with time 7 being the optimal

time for identifying these services due to the indicated need for support with the patient's

IADL, namely cleaning, meal preparation, shopping, and finances. The latest suggested

time at which these services should be identified would be time 9, while the patient was still living at home, and when basic ADL in addition to IADL were reportedly impaired.

By the latest suggested time and within the suggested time-period for identifying the service category, 91.7% of respondents identified the service category in Calgary, 75.0% in Edmonton, and 70.0% in Ottawa. By type of provider, all case managers, 83.3% of family physicians, and about 61.5% of specialists had identified the service category by the latest suggested time point. The proportions by site or provider were not statistically different, and the distribution observed by the optimal suggested time, as recommended by the CCCDTD (19), was about 10% lower across all providers compared to the proportions by latest suggested time.

The findings suggest that specialists do not have as strong a role in referring to home care and in-home respite services, and rather that it is primarily the responsibility of case managers and family physicians. Further, the findings also suggest that efforts are necessary for family physicians, particularly from Edmonton and Ottawa, to increase their referrals to these services at the optimal time in the disease trajectory. Delayed referral to home care by physicians has been reported to heavily impact the health of the caregiver (23). This is also important, as previous research has indicated that physicians strongly influence caregiver acceptance of community services (23). Further, the physician's ability to work with patients to increase awareness and acceptance of community services are key to determining their level of satisfaction (17) and could help to address caregiver service utilization issues (117).

4.2.5.2 Day program services

Similar to in-home support services, in accordance with the CCCDTD (19) recommendations, the earliest suggested time to identify day programs is upon diagnosis

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(time 5) and the latest suggested time is time 9 (increase support in ADL and caregiver stress), with time 8 (increase support in IADL, ADL, and behavior and psychological symptoms) being the optimal suggested time for identifying day programs as the patient became anxious when left alone. By the latest suggested time and within the suggested time-period, all participants in Calgary had identified these services compared to 60.0% of participants in Ottawa (p=0.023); the participants that did not identify these services in Ottawa were composed of both family physicians and specialists. Also, a high proportion of participants from Edmonton (91.7%) identified these services by this latest suggested time. However, the overall behavior throughout the vignette was not different, as the log-rank test that compared the time-to-event curves by site was not statistically significant. In relation to the type of provider, all case managers had identified these services, while 84.3% of specialist and 75.0% of family physicians identified these services by the latest suggested time. A similar distribution was observed by the optimal suggested time when compared to the latest suggested time. These findings indicate that all providers, particularly participants from Calgary and Edmonton, are relatively aware of day programs. Further, the findings raise questions relating to the relatively low proportion of physicians that identified day programs in Ottawa.

4.5.6 Summary of findings

In summary, this study demonstrated variation in the provision of dementia-related care services across the types of health care providers. Among the 3 providers, case managers frequently identified future planning-related services, informal support networks, in-home support services, and day programs in a timely manner. A relatively high proportion of family physicians also appropriately identified in-home support services and day programs. In regards to specialists, they frequently identified depression-related

services, delirium-related services, and day programs within the suggested time period. Further, all health care providers in this study, regardless of the type of provider, identified the Alzheimer Society and related services by the latest suggested time point.

A component of this variation can be explained by the differences of their clinical roles and responsibilities. For example, the findings suggest that case managers have a key role in the coordination and mobilization of particular dementia-related care services, namely, future planning and related services; home care and respite services; and educational and social support services. Also, specialists are instrumental in medical assessment and treatment services; however, facilitating community services such as in-home support services may not be a key component of their practice.

The variation may also suggest that improvements can be made in the provision of care for some providers. For instance, family physicians have an important role to play in the coordination of dementia-related care services (118). The role of family physicians in the care of people with dementia and their caregivers is multidimensional, which includes diagnosis, education on the disease, providing psychological support, and coordinating social support networks for the caregiver (119). However, the findings from this study indicated that this role is not consistently fulfilled by family physicians. Previous research reported that training and education is necessary for family physicians to address issues in dementia care. These issues include their level of confidence in making a correct diagnosis, disclosing the diagnosis, and knowledge of community resources (120,121); particularly when patients have indicated that their family physicians' understanding of dementia and community services are important to their level of satisfaction with the health care system (17). Hence, in addition to training and education to support physicians in dementia care, strategies to strengthen inter-professional collaboration (e.g. with case managers for the

increasing patient access to community resources, and with specialists for diagnosing and treating depression and delirium) are necessary in providing optimal support to patients with dementia and their caregivers (72).

This study also demonstrated that the provision of dementia-related care services varied across the 3 Canadian sites. In comparison to Edmonton and Ottawa, Calgary participants more frequently identified the following services at appropriate times: delirium-related services, future planning-related services, in-home support services, and day programs. Edmonton participants more frequently identified informal support networks, in-home support services, and day programs within the appropriate time period. In Ottawa, participants more frequently and appropriately identified depression-related services. Finally, participants from all sites identified the Alzheimer Society and related services appropriately.

The variation of service provision between sites maybe due to differences in resource availability and accessibility. For example, long wait times for structural neuroimaging services in Ottawa (122) may influence the decision-making processes of health care providers and may explain why participants from Ottawa identified this service earlier than the appropriate time point in the vignette. Further, Ottawa participants included both English and French-speaking health care providers. If the availability of community resources (e.g. in-home support services and day programs) that accommodate French-speaking clients is limited, then clinicians typically caring for French-speaking patients may be less likely to refer them to those services. Nevertheless, these explanations are speculative and require further investigation; questions remain regarding the reasons for the variations found between the 3 Canadian sites.

Further, the data analyzed in this study were collected following the release of Ontario's strategy for Alzheimer disease and related dementias (18), relating to a number of service categories examined in this study. For example, a considerable amount of funding was also invested into community services, including advance care planning, home care, in-home respite, and day programs. A large investment was also made into training physicians on the use of those community services. Hence, the findings from this study raise questions regarding the effectiveness of this strategy with its surge of attention and investment into these particular services.

4.3 Limitations to the sample size and data collection procedure

4.3.1 Sample

A limitation to the sample was the limited representation of case managers from Ottawa (1 participant), which may have resulted in selection bias (123). However, the sample size is comparable to the numbers of participants from other sites and providers, which were also small (4 to 5 participants per site and provider). Small sample sizes are justified in this study as they are typical of qualitative studies (124), which was the original intended method of analysis. Further, while an increased number of respondents from the each site and provider may provide better estimates of the true relationship for the purposes of SNA, it is not necessary to have more than one respondent representing each organization (77).

4.3.2 Data collection

Participants were not always clear as to what the interviewer was asking of them at various time points in the vignette. For example, case managers and specialists were often confused during early time points in the vignette before the hypothetical patient's visitation with the family physician, as participating case managers and specialists

would not typically see a patient prior to a diagnosis or referral from a family physician. Also, some participants (family physicians and case managers, in particular) were often confused about their responses after the patient was admitted into the hospital and when the patient was transitioned into long-term care, as the patient would typically be discharged from their care. Hence, during times in the vignette when some participants would not typically provide care for patients, rather than stating their non-involvement, participants talked about the actions of those beyond the responsibilities of their own role. By not making clear to the participants that responses to the vignette need to come from the perspective of their own role, the validity of the findings in relation to the type of health care professional may have been compromised.

Although modifications were made to the original vignette for the purposes of transferring it into an interview format, further development of the content relating to services provided by the hypothetical family physician would be beneficial in simplifying the data collection process (e.g. the way in which participants responded to the interview), analysis, and interpretation of the findings. Content relating to services provided by the family physician in the vignette often caused confusion among participants (e.g. information pertaining to home care and in-home respite services). While some were able to build on the type of services identified by the family physician and provide examples of community services specific to their local area, which were often upon the interviewer asking follow-up questions, a number of participants clearly did not know the appropriate response to the case description describing the actions of the family physician. Hence, it was not made clear to the participants that they were able to refute, agree, or expand on the actions of the family physician in the vignette from their own professional perspective.

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The questions of the vignette were not pre-tested, which was a limitation to the vignette. For the purposes of a structured interview, the interview questions ultimately determine the quality and usefulness of the data. The interview questions need to be very clear and describe exactly the type of information that is need in the study. A possible modification to the interview guide in order to address the limitations would be to remove all references to the family physician and any community resources. The interview questions could also be changed as follows: Would you be involved at this stage as a (insert the participant's role here)? If so, what actions would you take? Are they any resources that you would consider? Please be as specific as possible and provide the names of services and programs that you would consider.

There were also limitations to using data in SNA that need to be addressed (125). Although the data were used for the same purpose and this study was the primary analysis of the data, it was not analyzed using the intended method and someone other than myself collected the data. There was an opportunity to validate the transcripts with the audio recordings and discuss the process of data collection with one of the research coordinators responsible for recruiting study participants, conducting interviews, and transcribing audio recordings. This was a valuable opportunity to more effectively interpret the data. Some of the limitations observed during the validation process were as follows. During the validation of these transcripts by the author, variability was observed between the interviewers in terms of tone and pace, number of follow-up questions, and level of prompting. This variability in the interviews may have influenced the way in which participants responded to the case at each time point and the level of information, both breadth and depth, that was retrieved. Case descriptions of the standardized vignette were read at each time point and were fairly consistent across the interviewers; however, the

questions in regard to participant actions and resources at each time point were usually paraphrased. Hence, variability in the interviewers' questioning may have decreased the level of reliability, the ability to replicate measures under identical conditions (126).

After the author had a discussion with one of the research coordinators, there was an understanding that perhaps the variability in interviewing style was indicative of individual experience and knowledge relating to dementia-related health and social care services. Research coordinators with more clinical experience rarely asked follow-up questions and tended to have shorter interviews. Meanwhile, research coordinators with little to no clinical experience asked more follow-up questions to clarify responses and gain a better understanding of the field of inquiry, and tended to have longer interviews. For example, an interviewer with little to no clinical experience posed specific questions regarding services not identified by the participant and prompted their consideration of those services. Because the prompting of actions and resources identified by the interviewer may have biased the data collected, responses following such prompting were excluded from analysis. Nevertheless, in general, the impact of interviewing experience on interview responses is relatively small (127).

Although there are benefits to site-specific research coordinators, which aid in the development of local recruiting strategies, a common research coordinator for conducting interviews and transcribing audio recordings could decrease the variability in the interview process and increased the uniformity of the data collected. An educational training session for all research coordinators to learn the general actions and resources provided by practitioners could also decrease the variability of the data collected and increase the use of effective follow-up questions to seek more detailed responses (i.e.

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specific local community resources). However, the feasibility (e.g. logistics, time, location, distance, and budget) of a study needs to be taken into consideration (126).

Nevertheless, despite the limitations raised, the structured interview format employed in this study ensured that participants were asked about their actions at each time point. This minimized the overall variability in the data set and strengthened its internal validity. As a hypothesis generating study, caution is necessary when generalizing the study findings, due to a relatively small sample size. Future research with a larger random sample using the dementia case vignette and SNA methods would be valuable in testing the findings reported in this study.

4.4 Conclusions

To address the first research question, the results of this study suggest the following overarching service types, which are available and provided for people with dementia and their caregivers. These service types are: 1) medical assessment, treatment, and care management; 2) ancillary services related to co-morbidities; 3) future planning and related services; 4) education, social engagement, and social and psychological support services; 5) home care and respite services; 6) safety and emergency services; and 7) continuing care services.

To address the second research question, a noticeable difference was observed among the selection of specific service categories when compared inter-regionally and inter-professionally at different stages of the health condition. In relation to examples from the 'medical assessment, treatment, and care management' service type, there was a higher provision of depression-related services from specialists (by provider) and Ottawa participants (by site) within the recommended time period. Also from this service type, specialists (by provider) and Calgary participants (by site) more frequently and

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appropriately identified delirium-related services. However, for structural neuroimaging services, a higher proportion of Ottawa health providers identified it before the suggested time of provision, which suggests inappropriate use of this diagnostic resource. Regarding the 'future planning and related services' type, there was a higher provision of these services within the appropriate time period from case managers (by provider) and participants from Calgary (by site).

For examples from the 'education, social engagement, and social and psychological support services' type, the findings suggest similarity in the appropriate provision of Alzheimer Society and related services across all sites and providers. However, differences were observed in the second example of this service type, as the provision of services from informal social networks demonstrated that more case managers appropriately provided this service than physicians. By location, the appropriate provision of informal social networks was higher in Edmonton than the other sites.

In relation to examples from the 'home care and respite services' type, there was a difference in the provision of in-home support services; higher proportions of case managers and family physicians identified this service within the suggested time period than specialists. Also, higher proportions of Calgary and Edmonton participants appropriately identified this service than Ottawa. In the second example, day programs, higher proportions of participants from Calgary and Edmonton identified this service by the latest suggested time than participants from Ottawa. By type of provider, almost all health care providers appropriately identified day programs. Examples from the 'safety and emergency services' and 'continuing care services' types were not selected for analysis in this study, but warrant investigation in future phases of this study.

In conclusion, to address the third research question, there is an overall variation in the provision of services among different clinical professionals. In general, the results suggest that family physicians may not be performing to the standards outlined in the national guideline. One approach to assisting family physicians to fulfill their role as the facilitator of dementia-related care services would include better understanding of the appropriate roles of other providers, and formal recognition that inter-professional collaborations with other health care providers such as case managers and specialists can be integral in mobilizing the necessary support for patients with dementia and their caregivers throughout the disease trajectory.

Differences were also demonstrated in service delivery between the regions. Generally, the results suggest that participating clinicians in Ottawa, which encompassed both English and French respondents, provide services at frequencies and times that are less than ideal. The extent to which resources are available and accessible is key to impacting the time differential between service provision and service utilization. Hence, limitations in resource availability or accessibility (e.g. long waiting lists for a particular health or social service) to support the client population (e.g. French-speaking patients) may have influenced the decision-making process of clinicians when providing services for patients with dementia and their family caregivers.

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Appendix A: Interview schedule, the dementia case vignette

Adapted from the Champlain Dementia Network

Time After First Symptom	Hypothetical case
	Mrs. G.C. is a 76 year old married woman with Grade 12 education. She had a mother who developed Alzheimer's Disease onset age 84. Her medical history including hypertension, hyperlipidemia and osteoporosis. Her medications are Hydrochlorothiazide, Adalat XL, Lipitor, Calcium, Vitamin D, and Fosamax.
0 months (T1)	In the last six months her husband noted that she seemed to be a little bit forgetful, having some problems with names, "not quite as sharp" as one year previously, having a little more difficulty planning the bigger family social events and being a little less interested in leisure activities. She was still driving, shopping, cooking, independent in all her IADL's although she occasionally needed a reminder to take her medication.
6 months (T2)	While at the local Pharmacy her husband noticed that the Pharmacist was offering a 2 minute Dementia Screening Test so he and Mrs. G.C. did the test. He was fine but his wife had difficulties in animal naming (9 in one minute) and clock drawing. He realized that this was a significant issue which needed medical attention.
7 months (T3)	Her husband was now worried that this was more than normal ageing and did in fact arrange an appointment with the family physician. The family physician tested first with the MMSE on which her score was 25/30. Laboratory testing was negative. The conceptualization was that Mrs. G.C. was not as "sharp with her memory" as she was 6 months previously but no other areas of cognitive function or functional abilities were affected.

The Family Physician explained the concepts of mild cognitive impairment (MCI) and gave advice about being physically, mentally and socially active. He explained that it could progress to more problems with memory and said that he would see her in one year or earlier if there was greater concern about memory or function. The patient's hypertension and hyperlipidemia were well controlled and enteric coated aspirin was started at 81 mg daily. |
| 1 year, 7 months (T4) | One year later there didn't seem to be any progression of symptoms or functional loss. Her MMSE was now 24/30. |

| 2 years, 7 months (T5) | One year later the husband was more concerned because she got lost once while out driving the car back from her sister's home 30 miles away, and because he noticed that she was having more trouble with cooking more complicated meals, being more forgetful about medications and occasionally having angry outbursts. He was a little bit worried about leaving her alone for a weekend to go to his big curling bonspiels in the winter. Her MMSE was now 20/30. Her family physician did further evaluation which showed poor visual spatial function (clock drawing) and poor performance of Trails A and Trails B.

A CT scan was done which showed periventricular white matter changes and two old lacunar infarcts. The family physician made the diagnosis of mild mixed Alzheimer's and vascular dementia and she was started on cholinesterase inhibitor treatment. Based on her overall assessment he advised her that she needed to stop driving. |
| --- | --- |
| 2 years, 10 months (T6) | Three months later she was seen and she had improved. She was more active, more attune to social situations and conversation and more like her old self. Her MMSE had improved to 22. At this stage she only needed a little bit of cueing for finances and shopping.
She was referred to a Day Centre at a Senior's Centre for increased stimulation and socialization and to provide her husband with some respite. |
| 3 years, 7 months (T7) | 9 Months later she was about the same, though a little more forgetful. Her husband had hired a maid to do some of the simple cleaning services through the local community for-profit support agency and he also needed to become more involved in cooking simple meals, shopping and finances. Her MMSE was now 20/30. |
| 4 years, 7 months (T8) | One year later she was more forgetful, was unable to cook on the stove but still could use the microwave and do simple cold meals. She needed help with laundry and help with shopping. She was independent in her personal ADL's and only occasionally needed some cueing with respect to clothes selection. She did need help with respect to bathing and homecare became involved. Her MMSE was 16/30. She was more emotionally labile, apathetic and became very anxious if left alone. She was also having episodic bouts of agitation and occasionally aggressive behavior.

Memantine (Ebixa) was started and there was some improvement in terms of cognition, (MMSE 18/30), ADL, agitation and anxiety. |

5 years, 7 months (T9)	One year later her MMSE had declined to 15/30. Her husband was doing all the instrumental activities of daily living. She needed help with bathing, hygiene and toileting and there was considerable caregiver stress in that she could only be left alone for approximately an hour. Homecare was providing more services in terms of bathing and personal care. She was occasionally incontinent. Her gait was unsteady and her fall risk was increased, and thus she needed to use a walker. A day program helped with respect to daytime respite and there was an increase in paid services by the husband to lessen caregiver stress.
6 years, 7 months (T10)	One year later she had a small stroke leaving her with some weakness on the right side. Her incontinence was worse. She was admitted to the hospital where she became much more confused.
6 years, 8 months (T11)	Following a conference attended by phone by their daughter in Florida who felt that her parents should be together, she was discharged home. She developed a tendency towards wandering about the house and once wandered outside. Her husband was no longer able to look after her. It was decided that she would re-locate to residential care. This move was very positive for the husband.
7 years, 8 months (T12)	One year later her communication skills were markedly affected. Her mobility was decreased. The nursing staff noted that she began having increasing hallucinations and angry outbursts.
8 years, 8 months (T13)	One year later after receiving appropriate end of life care she was found deceased on morning nursing rounds.

Appendix B: Coding manual

A. Medical evaluation and other assessments
1. Address / assess co-morbidities
2. Assess for delirium
3. Assess for mood disorder or psychiatric assessment (e.g. depression, with geriatric depression scale)
4. Assess living situation (i.e. what kind of house they live in)
5. Assess social support system (i.e. family / friends)
6. Assess vascular risk factors
7. Autopsy
8. Blood pressure
9. Cognitive assessment (e.g. MMSE / MoCA)
10. Continue to monitor for future developments, follow-up (with either the patient or the caregiver), keep in touch, patient or caregiver being monitored in some way
11. Discuss abuse at home
12. Discuss / assess caregiver's health status (e.g. age), wellbeing, how he is coping, is he burnout or stressed (e.g. with Zarit Burden Index)
13. Discuss dementia risk factors
14. Discuss fall risk (e.g. history)
15. Discuss health care insurance (i.e. do they have private or public health insurance?)
16. Discuss safety at home, safety concerns
17. Discuss wandering (e.g. history)
18. Driving assessment
19. Eye / ophthalmology test and/or hearing test
20. Fall assessment (in-home assessment)
21. Functional assessment (assess ADL and IADL), e.g. with ILS (independent living scale)
22. General assessment
23. Geriatric assessment
24. Imagining (e.g. CT scan, x-ray)
25. Lab work / blood work
26. Medical history or co-lateral history
27. Neurological exam
28. Neuropsychology exam
29. Physical exam (including weight)
30. Psycho geriatric assessment
31. Review of diet
32. Rule out other medical issues (e.g. constipation, rule out UTI, infections, pneumonia, underlying bodily functions, stroke) and to treat them
33. Safety assessment (in-home assessment) or any home assessment
34. Sleep assessment
35. Surveillance (in-home, telephone)
36. Ask husband what is going on (general, not specified for what), document by husband,

symptom profile
37. Assess triggers for agitation, aggressive behavior
38. Behavioral mapping, behavioral assessment (e.g. functional behavioral rating instrument, behavioral flow sheets)
39. Assess frequency of incontinence, incontinence assessment (at home)
40. Psychosocial assessment
41. Assess what services they are currently linked to
42. Can they advocate for themselves
43. EKG
45. Assess personality changes
46. Are they veterans?
47. OT/PT assessment
48. Assess patient's responsibilities, work responsibilities
49. Assess heart rate
50. Assessment tool: RAI (resident assessment instrument) (ONT)
51. Assess alcohol and smoking – substance abuse
99. not applicable

B. Actions for the management of medications
1. Blister pack
2. Continue / review vitamin D
3. Dossette
4. Medication supervision / monitoring / continue medications
5. Review / optimize medications
6. Start / review/consider aspirin
7. Start / review other anticoagulants (e.g. Plavix)
8. Start / review/stop cholinesterase inhibitor (e.g. Aricept)
9. Start / review/stop Mematine / Ebixa
10. Start an atypical antipsychotic or an atypical neuroleptic (e.g. Risperdal, seroquel)
11. Tranquilizer
12. Antidepressant (e.g. SSRI)
13. Aldol (to calm the patient)
99. not applicable

C. Types of programs and services identified
1. A lock-secured unit in the hospital, special Alzheimer's unit, or geriatric unit
2. Advance care planning
3. Anticipatory grief counseling
4. Assisted living
5. Bereavement services or programs
6. Blood pressure machines at drug stores
7. Blood pressure machines at local fire halls
8. Bungalow
9. Call systems
10. Comfort and pain management

11. Community association
12. Companion care
13. Comprehensive support program (including caregiver support, education, and training programs)
14. Counseling (e.g. on expectations, shame, guilt, caregiver burden)
15. DAL – Designated assisted living
16. Day centre
17. Day hospital (including geriatric day hospitals)
18. Day program (increase or to start)
19. Dementia case management program
20. Discuss / assess for relocation / optional living arrangements (e.g. to LTC, DAL) (or to initiate, introduce idea, sow the seeds)
21. DNR – do not resuscitate
22. Driving evaluation services
23. Exercise program
24. Funeral homes
25. General information sessions about brain health and warning signs
26. Goals of care
27. Grief counseling program or anticipatory grief counseling
28. Hospice care
29. Hospital programs and services, or hospital admission
30. In-home respite
31. In-hospital psycho geriatrics
32. LTC – long-term care (getting paper work done for LTC e.g. CAT paperwork)
33. LTC mental health consultative services
34. Management of chronic disease program
35. Meals preparation services
36. Museums and zoos with seniors programs
37. Nursing care
38. Paid services (not specified)
39. Palliative and end of life care, planning, team
40. PCN – primary care network
41. Personal directives
42. Physiotherapy
43. Power of attorney (make sure it is in place or to activate it)
44. Rehabilitation, rehabilitation unit (including rehabilitation for stroke)
45. Residential care
46. Respite
47. Retirement home
48. Senior outreach programs
49. Seniors' centre / seniors' club
50. Support groups
51. Support groups specifically for driving cessation

52. Transportation services
53. Update will
54. Wandering registry or wandering bracelet
55. Falls education, hip protectors
56. Education on how to use walker
57. Seniors' shelter
58. Emergency distress line
59. Veterans affairs, department of veterans affairs
60. Consider a wheel chair
61. Incontinence education, counseling (e.g. no tea at bedtime)
62. Memorial service
63. Self managed care (put in money to get around the clock care)
64. Disability tax benefit
65. Conflict decision making, personal finances, medical decisions, living will, proxy
66. Pastoral care
67. Philosophy of care
68. Geriatric day clinic (Ottawa)
69. Hip protector
70. Psychotherapy
71. Memory clinic
72. Live-in care (ONT)
99. not applicable

D. Program names identified
1. 911 medical emergency (AB)
2. Adult Day Support Program (day program)
3. Alzheimer Society
4. Bereaved Families of Ontario—Ottawa
5. Calgary Chinese Elderly Citizens' Association
6. Calgary Seniors' resource society
7. Caring with Confidence Program
8. Catholic Family Services
9. CCAC – Community Care Access Centre (ONT)
10. City Links
11. Club 36 (day program)
12. Cognitive Assessment Clinic
13. Comfort keepers (companion care) or classic comfort caregivers or companion keepers
14. Community Accessible Rehabilitation Clinic
15. Community Geriatric Mental Health Service (AB)
16. Dealing with Dementia (a day program, education on progression, coping strategies, activities for client)
17. Distress Centre
18. DriveAble

19. Falls Prevention Clinic, falls clinic
20. Family Caregiver Centre
21. First Link
22. Geriatric Assessment and Rehabilitation unit or Geriatric Assessment Unit (GAU) in Ottawa
23. Geriatric day clinic
24. Geriatric mental health outreach team or geriatric outreach team (ONT)
25. HandiBus services
26. Health Link (AB)
27. HELP – Hospital Elder Life Program
28. Home Care (AB)
29. Jewish Family Service
30. Kerby centre
31. LifeLine (call system), lifeline medical alert bracelet
32. Living Well with a Chronic Condition Program (e.g. for hypertension – has 3 parts, 1) education for hypertension or dementia, 2) support group, 3) exercise program)
33. Meal on Meals
34. Memory Plus Program
35. Ministry of Transportation (ONT)
36. Motor Vehicles (AB)
37. NICHE – Nurses improving care for health system elders
38. Psycho-geriatric community services (ONT)
39. Regional Community Transition Program
40. Safely Home
41. Senior Health Clinic (AB)
42. St Paul's university services (ONT) - (D. 42, D.68, D.81 are the same)
43. Stroke prevention clinic
44. Transition services
45. WanderGuard (call system)
46. We care home services
47. Capsules of life
48. AMA driving information for older adults
49. Mobile response team (with psychologist, social workers, assess safety and risk with caregiver and client)
50. Senior Connect
51. Calgary Family Services
52. Need help getting food program (Calgary)
53. "Considering long term care" seminar at Alzheimer Society
54. Community care team for placement
55. Senior association of greater Edmonton (SAGE) (Edmonton)
56. Coping with care (for caregivers in Edmonton)
57. "Seniors carrying about seniors" program (Edmonton)
58. CHOICE day program (Edmonton)

59. St Micheals (day program) (Edmonton)
60. DATS (disabled adult transit service) alternative transportation (Edmonton)
61. Memory disorder clinic at Bruyere (ONT)
62. The guest house (ONT)
63. Garden Terrace (ONT)
64. Retire at Home (ONT)
65. Private Pay Care (ONT)
66. Elisabeth Bruyere Health Centre (ONT)
67. RoH (Royal Ottawa Hospital) (ONT)
68. St Paul's university services (ONT) – (D.42, D.68, D.81 are the same)
69. Paratransport (ONT)
70. Taxi
71. Psychogeriatric team (ONT)
72. Centre Champlain (ONT) – (D.72 & D.72 are the same)
73. Centre de services Guigues (ONT)
74. Residence Saint Louis (ONT)
75. Geriatric psychiatry clinic (ONT)
76. Geriatric psychiatry community service (ONT)
77. Centre d'accueil Champlain (ONT) (long-term care) – (D.72 & D.72 are the same)
78. Centre Pauline Charron (ONT) (seniors' centre)
79. Geriatric team at Civic Hospital (ONT)
80. Champlain Dementia Network (ONT)
81. Saint-Paul University's parish priest (ONT) – (D.42, D.68, D.81 are the same)
82. Bruyere dementia team (ONT)
99. not applicable

E. Areas of ADL / IADL support identified
1. Bathing
2. Cleaning, housekeeping, homemaking
3. Cooking / meals
4. Dressing
5. Eating
6. Finances / banking
7. Home maintenance (e.g. yard work, snow shoveling)
8. Personal care (e.g. hair, nails)
9. Shopping (e.g. grocery shopping)
10. Transportation
11. Incontinence products / support
12. General ADL/IADL support
13. Home care
14. not applicable

F. Other types of advice or action provided and topics identified
1. Activities, simulation, engagement (cognitive, social, physical)
2. Answer any questions

3.   Driving cessation
4.   Educate nursing staff on relief measures
5.   Family / friend disclosure / update and support (including church, neighbors, and family)
6.   Family conference
7.   Get her stabilized
8.   Home / environmental adjustments and adaptations (e.g. raised toilet seat and glue down rugs to prevent falls, make things easier, visual reminders, write things down)
9.   Improve strength, functional status, balance, mobility
10.   Offer condolences or call husband / talk to husband
11.   Provide 24 supervision, or increase supervision
12.   Provide education / non-pharmacological strategies (e.g. handling emotional outbursts, frustration, anxiety)
13.   Provide information and education about the brain, memory impairment, MCI and /or dementia
14.   Provide structure / routine
15.   Tell husband he did a good job
16.   Attend the funeral, call them
17.   Provide education / discuss planning trips, what to do to not leave her alone
18.   Provide driving information for older drivers, how to cope with loss of driving
19.   Education on coping strategies for how to be more self-efficient and work together to stay at home as long as possible
20.   Re-establish quality of time together (caregiver-patient)
21.   Educate need to observe patient for risk of wandering
22.   Discharge
23.   Structure environment
24.   Liaise with hospital team, so they are aware of what is happening at home
99.   not applicable

G. Types of health professional / staff identified
1.   Case manager
2.   Family physician
3.   Geriatric specialist (e.g. psychiatrist, geriatric psychiatrist, geriatrician)
4.   Maid or housekeeper
5.   Nurse
6.   Ophthalmologist
7.   Optometrist
8.   OT – occupational therapist
9.   Pharmacist
10.   Psychologist
11.   PT - physiotherapist
12.   RT – recreational therapist
13.   SW – social worker
14.   Therapist
15.   LTC physician
16.   LTC staff

17.   Lawyer
18.   Health care attendant
19.   PSW – personal support worker
20.   Speech therapy
21.   Priest
99.   not applicable

Appendix C: Commands for quantitative and statistical analysis

1. Chi-square tests and pairwise comparisons, by site and by type of health care provider using STATA 11
tab site home_t1 if timepoint==1, chi row
prtest home_t1 if cal_edm==1, by(site_code)
tab professional home_t1 if timepoint==1, chi row
prtest home_t1 if cm_fp==1, by(professional_code)

2. Time-to-event analysis commands for calculations and figures using STATA 11
##Preparing the data
stset timepoint, id(id) failure(binary==1)

##Time-to-event analysis table, log-rank test, and median
sts list, by(site)
stci, by(site)
sts test site, logrank
sts list, by(professional)
stci, by(professional)
sts test professional, logrank

##Time-to-event graphs, both by site and by professional
sts graph, failure by(site) risktable risktable(, size(small) rowtitle(, size(small)) title(, size(small))) ytitle(Probability of event) ytitle(, size(small)) ylabel(0(.2)1, labsize(small)) xtitle(Time point of case vignette) xtitle(, size(small)) xlabel(0(1)13, labels labsize(small) valuelabel ticks) xmtick(minmax) title(, size(medium)) subtitle(by site, size(small)) legend(size(small)) graphregion(fcolor(white)) plot1opts(lpattern(dot) lcolor(black)) plot2opts(lpattern(solid) lcolor(black)) plot3opts(lpattern(dash) lcolor(black))

sts graph, failure by(professional) risktable risktable(, size(small) rowtitle(, size(small)) title(, size(small))) ytitle(Probability of event) ytitle(, size(small)) ylabel(0(.2)1, labsize(small)) xtitle(Time point of case vignette) xtitle(, size(small)) xlabel(0(1)13, labels labsize(small) valuelabel ticks) xmtick(minmax) title(, size(medium)) subtitle(by professional, size(small)) legend(size(small)) graphregion(fcolor(white)) plot1opts(lpattern(dot) lcolor(black)) plot2opts(lpattern(solid) lcolor(black)) plot3opts(lpattern(dash) lcolor(black))

3. Bipartite graph commands for figures using R
##Install the 'sna' package with tools for social network analysis
install.packages("sna")
library("sna")

data<-read.csv(file.choose(),header=T)
rownames(data)<-data[,1]
data<-data[,-1]

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```
names(data)

##Time point 1
selected.data<-data[,c("CC1","CF1","CS1","EC1","EF1","ES1","OC1","OF1","OS1")]
names(selected.data)

selected.data<-as.matrix(selected.data)
is.matrix(selected.data)
library("sna")

gplot(selected.data, diag=TRUE, gmode="twomode", displaylabels=T,  "template t1",
displayisolates=F, usearrows=F, label.cex=0.7, vertex.cex=1.2,edge.lwd=T, label.pad=1,
interactive=TRUE, vertex.col=NULL)
```
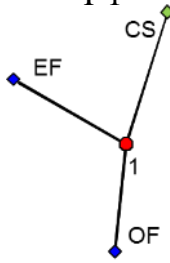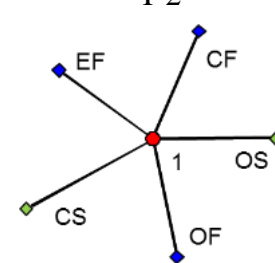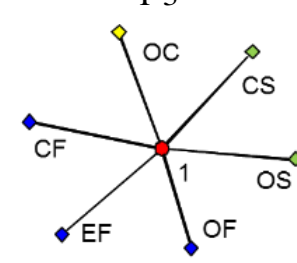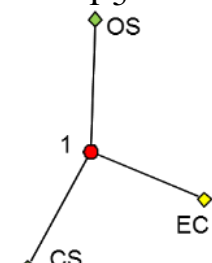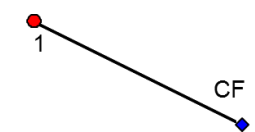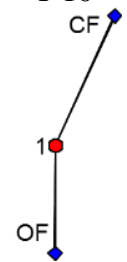
Appendix D: Figures and tables

Figure 13. Bipartite graph of structural neuroimaging services, identified at each time

T 1	T 2	T 3	T 4	T 5
			No identifications	
T 6	**T 7**	**T 8**	**T 9**	**T 10**
No identifications	No identifications	No identifications		
T 11	**T 12**	**T 13**		
No identifications	No identifications	No identifications		

Legend for Figure 13 and 14:
Node 1=structural neuroimaging

Figure 14. Bipartite graph of structural neuroimaging services, identified cumulatively
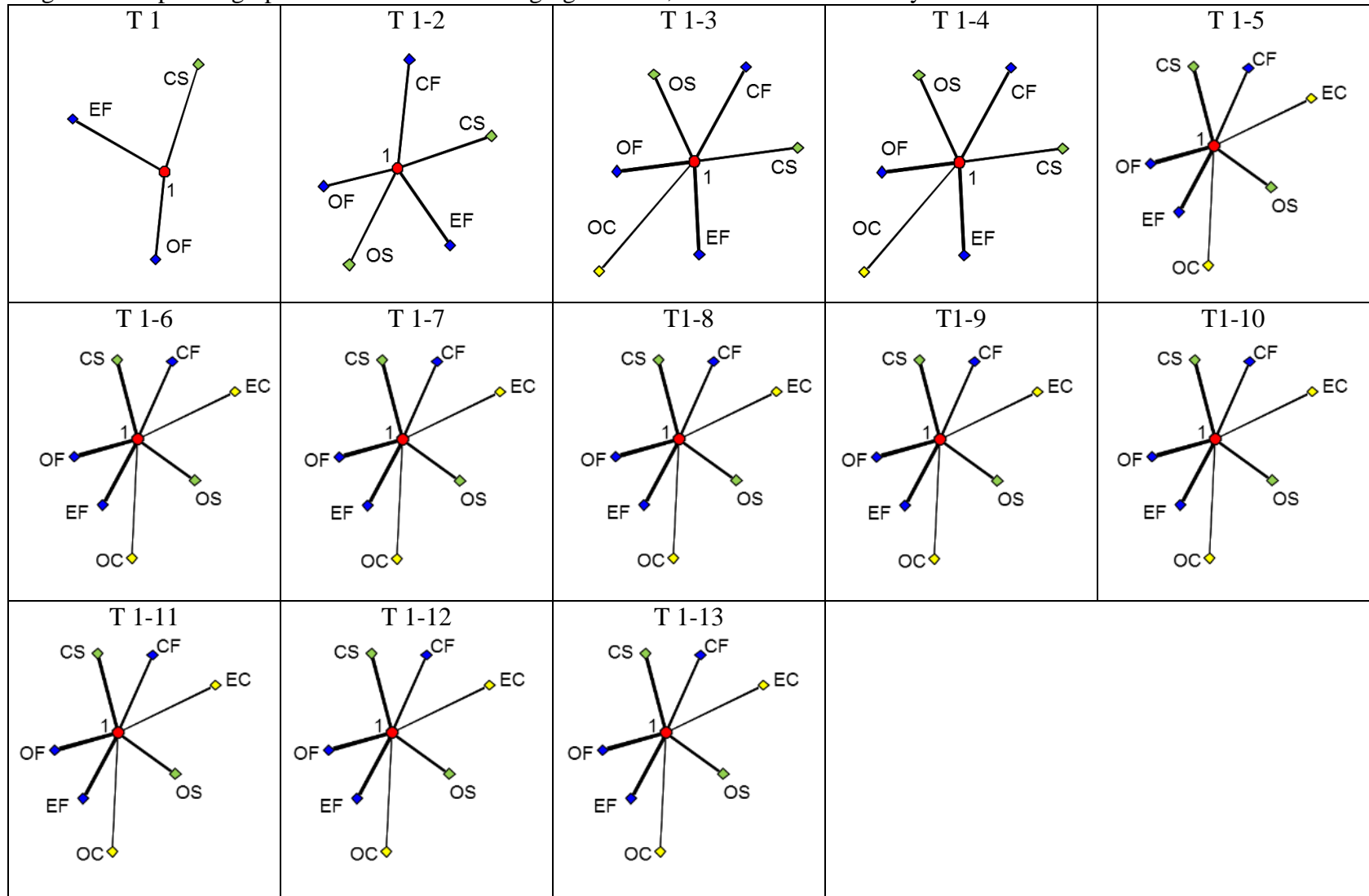
Table 2. Proportion of structural neuroimaging services, identified at each time

		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	1	8.33%	3	25.00%	2	16.67%	0	0.00%	1	8.33%	0	0.00%
	Edmonton (n, %)	12	1	8.33%	2	16.67%	1	8.33%	0	0.00%	1	8.33%	0	0.00%
	Ottawa (n, %)	10	2	20.00%	4	40.00%	4	40.00%	0	0.00%	1	10.00%	0	0.00%
	Total (n, %)	34	4	11.76%	9	26.47%	7	20.59%	0	0.00%	3	8.82%	0	0.00%
	Chi-square p-value	34	0.630		0.462		0.172		–		0.988		–	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	1	11.11%	0	0.00%	1	11.11%	0	0.00%
	Family physician (n, %)	12	3	25.00%	6	50.00%	4	33.33%	0	0.00%	0	0.00%	0	0.00%
	Geriatric specialist (n, %)	13	1	7.69%	3	23.08%	2	15.38%	0	0.00%	2	15.38%	0	0.00%
	Total (n, %)	34	4	11.76%	9	26.47%	7	20.59%	0	0.00%	3	8.82%	0	0.00%
	Chi-square p-value	34	0.180		0.035		0.386		–		0.384		–	
	95% CI of the difference CM vs FP	21	–		21.7% to 78.3%		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		0.17% to 46.0%		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		−9.5% to 63.3%		–		–		–		–	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	0	0.00%	0	0.00%	1	8.33%	1	8.33%	0	0.00%	0	0.00%	0	0.00%
	Edmonton (n, %)	12	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	0	0.00%	2	20.00%	0	0.00%	0	0.00%	0	0.00%
	Total (n, %)	34	0	0.00%	0	0.00%	1	2.94%	3	8.82%	0	0.00%	0	0.00%	0	0.00%
	Chi-square p-value	34	–		–		0.389		0.257		–		–		–	
	95% CI Calgary vs Edmonton	24	–		–		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		–		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		–		–		–		–		–		–	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Family physician (n, %)	12	0	0.00%	0	0.00%	1	8.33%	3	25.00%	0	0.00%	0	0.00%	0	0.00%
	Geriatric specialist (n, %)	13	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Total (n, %)	34	0	0.00%	0	0.00%	1	2.94%	3	8.82%	0	0.00%	0	0.00%	0	0.00%
	Chi-square p-value	34	–		–		0.389		0.049		–		–		–	
	95% CI CM vs FP	21	–		–		–		0.5% to 49.5%		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		0.5% to 49.5%		–		–		–	

PP=proportion of participants; T=time point; n=number of respondents identified; no.=total number of respondents; CI=confidence intervals; '—'=not applicable

Table 3. Proportion of structural neuroimaging services, identified cumulatively

		no.	T1		T1-T2		T1-T3		T1-T4		T1-T5		T1-T6	
Site	Calgary (n, %)	12	1	8.33%	4	33.33%	4	33.33%	4	33.33%	4	33.33%	4	33.33%
	Edmonton (n, %)	12	1	8.33%	2	16.67%	2	16.67%	2	16.67%	3	25.00%	3	25.00%
	Ottawa (n, %)	10	2	20.00%	6	60.00%	8	80.00%	8	80.00%	9	90.00%	9	90.00%
	Total (n, %)	34	4	11.76%	12	35.29%	14	41.18%	14	41.18%	16	47.06%	16	47.06%
	Chi-square p-value	34	0.630		0.105		0.009		0.009		0.005		0.005	
	95% CI of the difference Calgary vs Edmonton	24	–		–		−17.33% to 50.67%		−17.33% to 50.67%		−27.88% to 44.5%		−27.88% to 44.5%	
	95% CI of the difference Calgary vs Ottawa	22	–		–		10.25% to 83.08%		10.25% to 83.08%		24.15% to 89.18%		24.15% to 89.18%	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		30.79% to 95.88%		30.79% to 95.88%		34.24% to 95.76%		34.24% to 95.76%	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	1	11.11%	1	11.11%	2	22.22%	2	22.22%
	Family physician (n, %)	12	3	25.00%	8	66.67%	4	33.33%	8	66.67%	8	66.67%	8	66.67%
	Geriatric specialist (n, %)	13	1	7.69%	4	30.77%	8	61.54%	5	38.46%	6	46.15%	6	46.15%
	Total (n, %)	34	4	11.76%	12	35.29%	13	38.24%	14	41.18%	16	47.06%	16	47.06%
	Chi-square p-value	34	0.180		0.006		0.037		0.037		0.130		0.130	
	95% CI of the difference CM vs FP	21	–		40.0% to 93.3%		21.90% to 89.21%		21.9% to 89.2%		–		–	
	95% CI of the difference CM vs SP	22	–		5.6% to 55.9%		−6.13% to 60.83%		−60.8% to 6.1%		–		–	
	95% CI of the difference FP vs SP	25	–		−0.7% to 72.5%		−9.36% to 65.77%		−9.3% to 65.8%		–		–	

		no.	T1-T7		T1-T8		T1-T9		T1-T10		T1-T11		T1-T12		T1-T13	
Site	Calgary (n, %)	12	4	33.33%	4	33.33%	4	33.33%	4	33.33%	4	33.33%	4	33.33%	4	33.33%
	Edmonton (n, %)	12	3	25.00%	3	25.00%	3	25.00%	3	25.00%	3	25.00%	3	25.00%	3	25.00%
	Ottawa (n, %)	10	9	90.00%	9	90.00%	9	90.00%	9	90.00%	9	90.00%	9	90.00%	9	90.00%
	Total (n, %)	34	16	47.06%	16	47.06%	16	47.06%	16	47.06%	16	47.06%	16	47.06%	16	47.06%
	Chi-square p-value	34	0.005		0.005		0.005		0.005		0.005		0.005		0.005	
	95% CI Calgary vs Edmonton	24	−27.88% to 44.5%		−27.88% to 44.5%		−27.88% to 44.5%		−27.88% to 44.5%		−27.88% to 44.5%		−27.88% to 44.5%		−27.88% to 44.5%	
	95% CI Calgary vs Ottawa	22	24.15% to 89.18%		24.15% to 89.18%		24.15% to 89.18%		24.15% to 89.18%		24.15% to 89.18%		24.15% to 89.18%		24.15% to 89.18%	
	95% CI Edmonton vs Ottawa	22	34.24% to 95.76%		34.24% to 95.76%		34.24% to 95.76%		34.24% to 95.76%		34.24% to 95.76%		34.24% to 95.76%		34.24% to 95.76%	
Profession	Case manager (n, %)	9	2	22.22%	2	22.22%	2	22.22%	2	22.22%	2	22.22%	2	22.22%	2	22.22%
	Family physician (n, %)	12	8	66.67%	8	66.67%	8	66.67%	8	66.67%	8	66.67%	8	66.67%	8	66.67%
	Geriatric specialist (n, %)	13	6	46.15%	6	46.15%	6	46.15%	6	46.15%	6	46.15%	6	46.15%	6	46.15%
	Total (n, %)	34	0.13	0.38%	16	47.06%	16	47.06%	16	47.06%	16	47.06%	16	47.06%	16	47.06%
	Chi-square p-value	34	0.130		0.130		0.130		0.130		0.130		0.130		0.130	
	95% CI CM vs FP	21	–		–		–		–		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		–		–		–		–	

Figure 15. Structural neuroimaging identified, time-to-event by site

Kaplan-Meier failure estimates
by site

Number at risk													
calgary	12	12	11	8	8	8	8	8	8	8	8	8	8	8
edmonton	12	12	11	10	10	10	9	9	9	9	9	9	9	9
ottawa	10	10	8	4	2	2	1	1	1	1	1	1	1	1
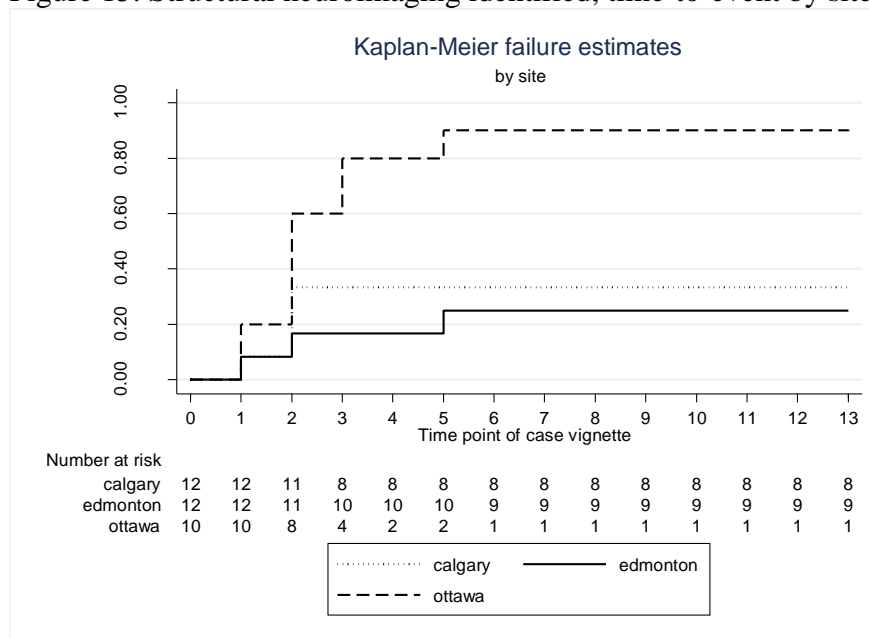
Log-rank test, p=0.0038

Figure 16. Structural neuroimaging identified, time-to-event by role

Kaplan-Meier failure estimates
by professional

Number at risk													
CM	9	9	9	9	8	8	7	7	7	7	7	7	7	7
FP	12	12	9	4	4	4	4	4	4	4	4	4	4	4
SP	13	13	12	9	8	8	7	7	7	7	7	7	7	7
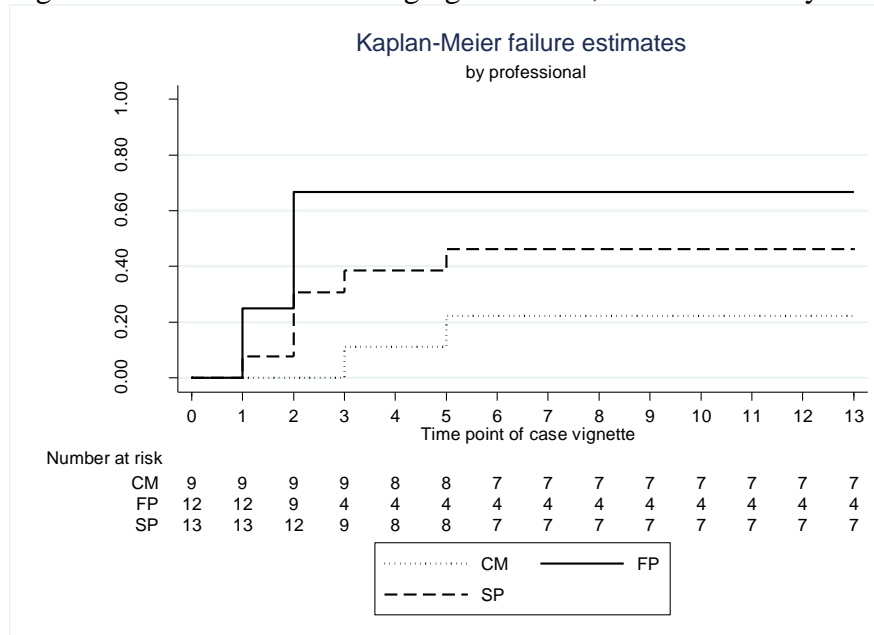
Log-rank test, p=0.0672

Table 4. Proportion of depression-related services, identified at each time

		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	1	8.33%	1	8.33%	0	0.00%	0	0.00%	1	8.33%	0	0.00%
	Edmonton (n, %)	12	4	33.33%	0	0.00%	1	8.33%	0	0.00%	0	0.00%	0	0.00%
	Ottawa (n, %)	10	3	30.00%	0	0.00%	0	0.00%	0	0.00%	3	30.00%	0	0.00%
	Total (n, %)	34	8	23.53%	1	2.94%	1	2.94%	0	0.00%	4	11.76%	0	0.00%
	Chi-square p-value	34	0.299		0.389		0.389		–		0.085		–	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	1	11.11%	0	0.00%	0	0.00%	1	11.11%	0	0.00%
	Family physician (n, %)	12	2	16.67%	0	0.00%	1	8.33%	0	0.00%	0	0.00%	0	0.00%
	Geriatric specialist (n, %)	13	5	38.46%	0	0.00%	0	0.00%	0	0.00%	3	23.08%	0	0.00%
	Total (n, %)	34	8	23.53%	1	2.94%	1	2.94%	0	0.00%	4	11.76%	0	0.00%
	Chi-square p-value	34	0.260		0.239		0.389		–		0.201		–	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	1	8.33%	1	8.33%	0	0.00%	0	0.00%	0	0.00%	1	8.33%	0	0.00%
	Edmonton (n, %)	12	0	0.00%	1	8.33%	0	0.00%	1	8.33%	0	0.00%	0	0.00%	0	0.00%
	Ottawa (n, %)	10	1	10.00%	6	60.00%	1	10.00%	1	10.00%	0	0.00%	1	10.00%	0	0.00%
	Total (n, %)	34	2	5.88%	8	23.53%	1	2.94%	2	5.88%	0	0.00%	2	5.88%	0	0.00%
	Chi-square p-value	34	0.553		0.005		0.290		0.553		–		0.553		–	
	95% CI Calgary vs Edmonton	24	–		−22.1% to 22.1%		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		17.5% to 85.8%		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		17.5% to 85.8%		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Family physician (n, %)	12	0	0.00%	3	25.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Geriatric specialist (n, %)	13	1	7.69%	5	38.46%	1	7.69%	2	15.38%	0	0.00%	2	15.38%	0	0.00%
	Total (n, %)	34	2	5.88%	8	23.53%	1	2.94%	2	5.88%	0	0.00%	2	5.88%	0	0.00%
	Chi-square p-value	34	0.530		0.111		0.435		0.180		–		0.180		–	
	95% CI CM vs FP	21	–		–		–		–		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		–		–		–		–	

Table 5. Proportion of depression-related services, identified cumulatively

		no.	T1		T1-T2		T1-T3		T1-T4		T1-T5		T1-T6	
Site	Calgary (n, %)	12	1	8.33%	1	8.33%	1	8.33%	1	8.33%	1	8.33%	1	8.33%
	Edmonton (n, %)	12	4	33.33%	4	33.33%	4	33.33%	4	33.33%	4	33.33%	4	33.33%
	Ottawa (n, %)	10	3	30.00%	3	30.00%	3	30.00%	3	30.00%	4	40.00%	4	40.00%
	Total (n, %)	34	8	23.53%	8	23.53%	8	23.53%	8	23.53%	9	26.47%	9	26.47%
	Chi-square p-value	34	0.299		0.299		0.299		0.299		0.196		0.196	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	1	11.11%	1	11.11%	1	11.11%	1	11.11%	1	11.11%
	Family physician (n, %)	12	2	16.67%	2	16.67%	2	16.67%	2	16.67%	2	16.67%	2	16.67%
	Geriatric specialist (n, %)	13	5	38.46%	5	38.46%	5	38.46%	5	38.46%	6	46.15%	6	46.15%
	Total (n, %)	34	8	23.53%	8	23.53%	8	23.53%	8	23.53%	9	26.47%	9	26.47%
	Chi-square p-value	34	0.260		0.260		0.260		0.260		0.118		0.118	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T1-T7		T1-T8		T1-T9		T1-T10		T1-T11		T1-T12		T1-T13	
Site	Calgary (n, %)	12	1	8.33%	2	16.67%	2	16.67%	2	16.67%	2	16.67%	3	25.00%	3	25.00%
	Edmonton (n, %)	12	4	33.33%	5	41.67%	5	41.67%	5	41.67%	5	41.67%	5	41.67%	5	41.67%
	Ottawa (n, %)	10	4	40.00%	8	80.00%	8	80.00%	8	80.00%	8	80.00%	8	80.00%	8	80.00%
	Total (n, %)	34	9	26.47%	15	44.12%	15	44.12%	15	44.12%	15	44.12%	16	47.06%	16	47.06%
	Chi-square p-value	34	0.196		0.012		0.012		0.012		0.012		0.033		0.033	
	95% CI Calgary vs Edmonton	24	–		−60.0% to 10.0%		−60.0% to 10.0%		−60.0% to 10.0%		−60.0% to 10.0%		−53.8% to 20.4%		−53.8% to 20.4%	
	95% CI Calgary vs Ottawa	22	–		30.8% to 95.9%		30.8% to 95.8%		30.8% to 95.8%		30.8% to 95.8%		20.1% to 89.9%		20.1% to 89.9%	
	95% CI Edmonton vs Ottawa	22	–		1.0% to 75.7%		1.0% to 75.7%		1.0% to 75.7%		1.0% to 75.7%		1.0% to 75.7%		1.0% to 75.7%	
Profession	Case manager (n, %)	9	1	11.11%	1	11.11%	1	11.11%	1	11.11%	1	11.11%	1	11.11%	1	11.11%
	Family physician (n, %)	12	2	16.67%	5	41.67%	5	41.67%	5	41.67%	5	41.67%	5	41.67%	5	41.67%
	Geriatric specialist (n, %)	13	6	46.15%	9	69.23%	9	69.23%	9	69.23%	9	69.23%	10	76.92%	10	76.92%
	Total (n, %)	34	9	26.47%	15	44.12%	15	44.12%	15	44.12%	15	44.12%	16	47.06%	16	47.06%
	Chi-square p-value	34	0.118		0.026		0.026		0.026		0.026		0.009		0.009	
	95% CI CM vs FP	21	–		−65.2% to 4.1%		−65.2% to 4.1%		−65.2% to 4.1%		−65.2% to 4.1%		−65.2% to 4.1%		−65.2% to 4.1%	
	95% CI CM vs SP	22	–		25.7% to 90.6%		25.7% to 90.6%		25.7% to 90.6%		25.7% to 90.6%		35.1% to 96.6%		35.1% to 96.6%	
	95% CI FP vs SP	25	–		−65.1% to 1.0%		−65.1% to 1.0%		−65.1% to 1.0%		−65.1% to 1.0%		−71.3% to 0.8%		−71.3% to 0.8%	

Figure 17. Depression-related services identified, time-to-event by site

Kaplan-Meier failure estimates
by site

Number at risk

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Calgary	12	12	11	11	11	11	11	11	11	10	10	10	10	9
Edmonton	12	12	8	8	8	8	8	8	8	7	7	7	7	7
Ottawa	10	10	7	7	7	7	6	6	6	2	2	2	2	2
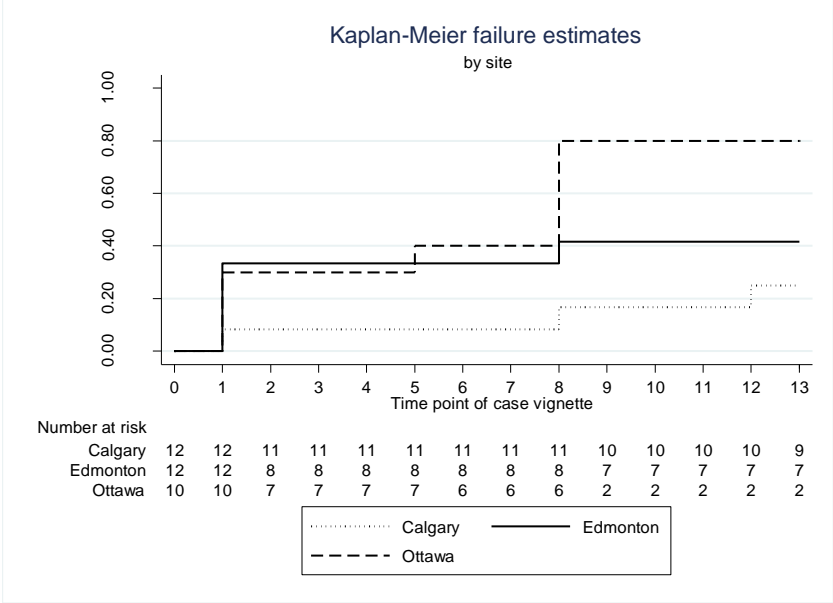
Log-rank test, p=0.0347

Figure 18. Depression-related services identified, time-to-event by role

Kaplan-Meier failure estimates
by professional

Number at risk

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
CM	9	9	8	8	8	8	8	8	8	8	8	8	8	8
FP	12	12	10	10	10	10	10	10	10	7	7	7	7	7
SP	13	13	8	8	8	8	7	7	7	4	4	4	4	3
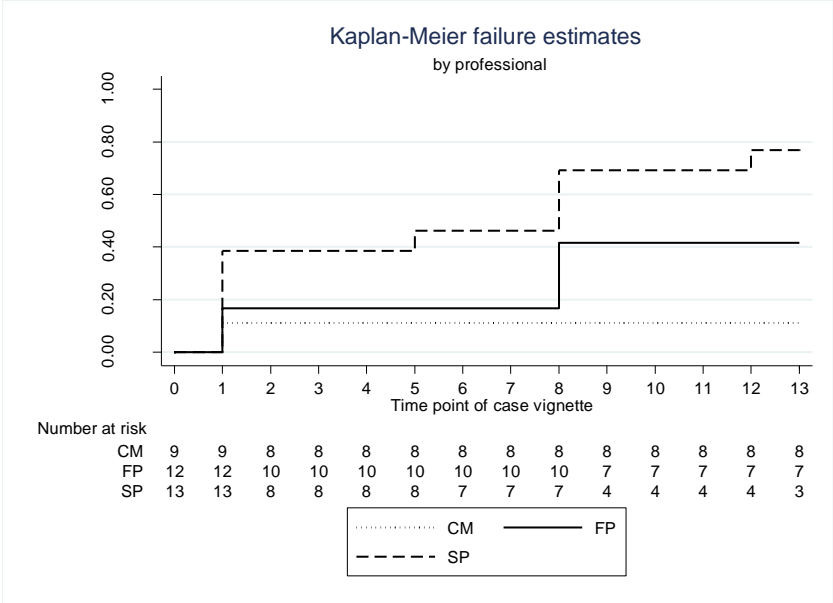
Log-rank test, p=0.0098

Table 6. Proportion of delirium-related services, identified at each time

		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	1	8.33%	1	8.33%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Edmonton (n, %)	12	2	16.67%	0	0.00%	0	0.00%	0	0.00%	1	8.33%	1	8.33%
	Ottawa (n, %)	10	0	0.00%	2	20.00%	0	0.00%	0	0.00%	2	20.00%	1	10.00%
	Total (n, %)	34	3	8.82%	3	8.82%	0	0.00%	0	0.00%	3	8.82%	2	5.88%
	Chi-square p-value	34	0.389		0.257		–		–		0.257		0.553	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	1	11.11%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Family physician (n, %)	12	2	16.67%	0	0.00%	0	0.00%	0	0.00%	1	8.33%	1	8.33%
	Geriatric specialist (n, %)	13	0	0.00%	2	15.38%	0	0.00%	0	0.00%	2	15.38%	1	7.69%
	Total (n, %)	34	3	8.82%	3	8.82%	0	0.00%	0	0.00%	3	8.82%	2	5.88%
	Chi-square p-value	34	0.327		0.384		–		–		0.456		0.681	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	0	0.00%	0	0.00%	1	8.33%	7	58.33%	0	0.00%	6	50.00%	0	0.00%
	Edmonton (n, %)	12	1	8.33%	1	8.33%	0	0.00%	5	41.67%	0	0.00%	4	33.33%	0	0.00%
	Ottawa (n, %)	10	0	0.00%	2	20.00%	1	10.00%	3	30.00%	0	0.00%	6	60.00%	0	0.00%
	Total (n, %)	34	1	2.94%	3	8.82%	2	5.88%	15	44.12%	0	0.00%	16	47.06%	0	0.00%
	Chi-square p-value	34	0.389		0.257		0.553		0.402		–		0.445		–	
	95% CI Calgary vs Edmonton	24	–		–		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		–		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		–		–		–		–		–		–	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	0	0.00%	3	33.33%	0	0.00%	1	11.11%	0	0.00%
	Family physician (n, %)	12	1	8.33%	2	16.67%	0	0.00%	5	41.67%	0	0.00%	6	50.00%	0	0.00%
	Geriatric specialist (n, %)	13	0	0.00%	1	7.69%	2	15.38%	7	53.85%	0	0.00%	9	69.23%	0	0.00%
	Total (n, %)	34	1	2.94%	3	8.82%	2	5.88%	15	44.12%	0	0.00%	16	47.06%	0	0.00%
	Chi-square p-value	34	0.389		0.405		0.18		0.621		–		0.026		–	
	95% CI CM vs FP	21	–		–		–		–		–		3.9% to 73.8%		–	
	95% CI CM vs SP	22	–		–		–		–		–		25.7% to 90.5%		–	
	95% CI FP vs SP	25	–		–		–		–		–		−57.0% to 18.6%		–	

Table 7. Proportion of delirium-related services, identified cumulatively

		no.	T1		T1-T2		T1-T3		T1-T4		T1-T5		T1-T6	
Site	Calgary (n, %)	12	1	8.33%	1	8.33%	1	8.33%	1	8.33%	1	8.33%	1	8.33%
	Edmonton (n, %)	12	2	16.67%	2	16.67%	2	16.67%	2	16.67%	2	16.67%	2	16.67%
	Ottawa (n, %)	10	0	0.00%	2	20.00%	2	20.00%	2	20.00%	3	30.00%	3	30.00%
	Total (n, %)	34	3	8.82%	5	14.71%	5	14.71%	5	14.71%	6	17.65%	6	17.65%
	Chi-square p-value	34	0.389		0.723		0.723		0.723		0.412		0.412	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	1	11.11%	1	11.11%	1	11.11%	1	11.11%	1	11.11%
	Family physician (n, %)	12	2	16.67%	2	16.67%	2	16.67%	2	16.67%	2	16.67%	2	16.67%
	Geriatric specialist (n, %)	13	0	0.00%	2	15.38%	2	15.38%	2	15.38%	3	23.08%	3	23.08%
	Total (n, %)	34	3	8.82%	5	14.71%	5	14.71%	5	14.71%	6	17.65%	6	17.65%
	Chi-square p-value	34	0.327		0.935		0.935		0.935		0.765		0.765	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T1-T7		T1-T8		T1-T9		T1-T10		T1-T11		T1-T12		T1-T13	
Site	Calgary (n, %)	12	1	8.33%	1	8.33%	2	16.67%	8	66.67%	8	66.67%	9	75.00%	9	75.00%
	Edmonton (n, %)	12	2	16.67%	2	16.67%	2	16.67%	6	50.00%	6	50.00%	6	50.00%	6	50.00%
	Ottawa (n, %)	10	3	30.00%	4	40.00%	4	40.00%	5	50.00%	5	50.00%	6	60.00%	6	60.00%
	Total (n, %)	34	6	17.65%	7	20.59%	8	23.53%	19	55.88%	19	55.88%	21	61.76%	21	61.76%
	Chi-square p-value	34	0.412		0.172		0.344		0.646		0.646		0.448		0.448	
	95% CI Calgary vs Edmonton	24	–		–		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		–		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		–		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	1	11.11%	1	11.11%	4	44.44%	4	44.44%	4	44.44%	4	44.44%
	Family physician (n, %)	12	2	16.67%	3	25.00%	3	25.00%	6	50.00%	6	50.00%	7	58.33%	7	58.33%
	Geriatric specialist (n, %)	13	3	23.08%	3	23.08%	4	30.77%	9	69.23%	9	69.23%	10	76.92%	10	76.92%
	Total (n, %)	34	6	17.65%	7	20.59%	8	23.53%	19	55.88%	19	55.88%	21	61.76%	21	61.76%
	Chi-square p-value	34	0.765		0.709		0.559		0.453		0.453		0.291		0.291	
	95% CI CM vs FP	21	–		–		–		–		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		–		–		–		–	

Figure 19. Delirium-related services identified, time-to-event by site

Kaplan-Meier failure estimates
by site

Number at risk

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Calgary	12	12	11	11	11	11	11	11	11	11	10	4	4	3
Edmonton	12	12	10	10	10	10	10	10	10	10	10	6	6	6
Ottawa	10	10	10	8	8	8	7	7	7	6	6	5	5	4

Log-rank test, p=0.6401

Figure 20. Delirium-related services identified, time-to-event by role

Kaplan-Meier failure estimates
by professional

Number at risk

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
CM	9	9	8	8	8	8	8	8	8	8	8	5	5	5
FP	12	12	10	10	10	10	10	10	10	9	9	6	6	5
SP	13	13	13	11	11	11	10	10	10	10	9	4	4	3
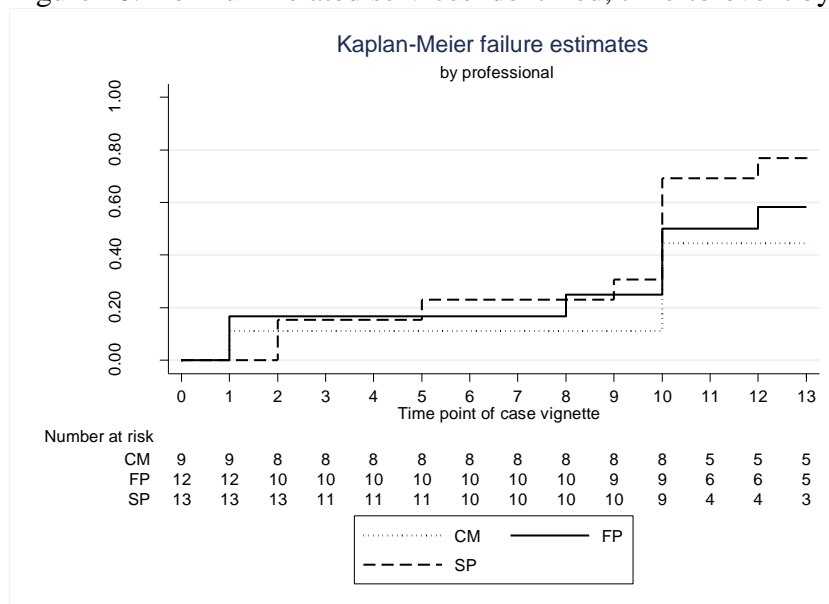
Log-rank test, p=0.330

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Table 8. Proportion of future planning and related services, identified at each time

		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	1	8.33%	4	33.33%	5	41.67%	1	8.33%	2	16.67%	3	25.00%
	Edmonton (n, %)	12	1	8.33%	0	0.00%	3	25.00%	2	16.67%	3	25.00%	2	16.67%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	2	20.00%	1	10.00%	2	20.00%	0	0.00%
	Total (n, %)	34	2	5.88%	4	11.76%	10	29.41%	4	11.76%	7	20.59%	5	14.71%
	Chi-square p-value	34	0.642		0.016		0.495		0.801		0.879		0.250	
	95% CI of the difference Calgary vs Edmon	24	–		6.6% to 60.0%		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		6.6% to 60.0%		–		–		–		–	
	95% CI of the difference Edmonton vs Otta	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	2	22.22%	0	0.00%	3	33.33%	3	33.33%	3	33.33%	1	11.11%
	Family physician (n, %)	12	0	0.00%	2	16.67%	2	16.67%	0	0.00%	1	8.33%	1	8.33%
	Geriatric specialist (n, %)	13	0	0.00%	2	15.38%	5	38.46%	1	7.69%	3	23.08%	3	23.08%
	Total (n, %)	34	2	5.88%	4	11.76%	10	29.41%	4	11.76%	7	20.59%	5	14.71%
	Chi-square p-value	34	0.052		0.440		0.468		0.054		0.360		0.547	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	1	8.33%	2	16.67%	1	8.33%	1	8.33%	3	25.00%	0	0.00%	1	8.33%
	Edmonton (n, %)	12	1	8.33%	2	16.67%	3	25.00%	1	8.33%	2	16.67%	0	0.00%	0	0.00%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	2	20.00%	2	20.00%	0	0.00%	2	20.00%	1	10.00%
	Total (n, %)	34	2	5.88%	4	11.76%	6	17.65%	4	11.76%	5	14.71%	1	2.94%	2	5.88%
	Chi-square p-value	34	0.642		0.389		0.549		0.630		0.250		0.290		0.553	
	95% CI Calgary vs Edmonton	24	–		–		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		–		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		–		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	0	0.00%	1	11.11%	0	0.00%	2	22.22%	0	0.00%	0	0.00%
	Family physician (n, %)	12	0	0.00%	2	16.67%	2	16.67%	2	16.67%	1	8.33%	1	8.33%	1	8.33%
	Geriatric specialist (n, %)	13	1	7.69%	2	15.38%	3	23.08%	2	15.38%	2	15.38%	0	0.00%	1	7.69%
	Total (n, %)	34	2	5.88%	4	11.76%	6	17.65%	4	11.76%	5	14.71%	1	2.94%	2	5.88%
	Chi-square p-value	34	0.530		0.440		0.765		0.440		0.671		0.389		0.681	
	95% CI CM vs FP	21	–		–		–		–		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		–		–		–		–	

Table 9. Proportion of future planning and related services, identified cumulatively

		no.	T1		T1-T2		T1-T3		T1-T4		T1-T5		T1-T6	
Site	Calgary (n, %)	12	1	8.33%	5	41.67%	9	75.00%	9	75.00%	10	83.33%	11	91.67%
	Edmonton (n, %)	12	1	8.33%	1	8.33%	4	33.33%	6	50.00%	6	50.00%	6	50.00%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	2	20.00%	2	20.00%	3	30.00%	3	30.00%
	Total (n, %)	34	2	5.88%	6	17.65%	15	44.12%	17	50.00%	19	55.88%	20	58.82%
	Chi-square p-value	34	0.642		0.022		0.023		0.037		0.038		0.010	
	95% CI of the difference Calgary vs Edmon	24	–		1.3% to 65.3%		5.4% to 77.9%		−12.4% to 62.4%		−2.0% to 68.6%		9.3% to 74.0%	
	95% CI of the difference Calgary vs Ottawa	22	–		13.8% to 69.6%		20.1% to 89.9%		20.1% to 89.9%		18.0% to 88.7%		29.2% to 94.1%	
	95% CI of the difference Edmonton vs Otta	22	–		−7.3% to 24.0%		−23.1% to 49.8%		−7.6% to 67.6%		−20.1% to 60.1%		−20.1% to 60.1%	
Profession	Case manager (n, %)	9	2	22.22%	2	22.22%	5	55.56%	6	66.67%	7	77.78%	7	77.78%
	Family physician (n, %)	12	0	0.00%	2	16.67%	4	33.33%	4	33.33%	4	33.33%	4	33.33%
	Geriatric specialist (n, %)	13	0	0.00%	2	15.38%	6	46.15%	7	53.85%	8	61.54%	9	69.23%
	Total (n, %)	34	2	5.88%	6	17.65%	15	44.12%	17	50.00%	19	55.88%	20	58.82%
	Chi-square p-value	34	0.052		0.912		0.587		0.300		0.111		0.077	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T1-T7		T1-T8		T1-T9		T1-T10		T1-T11		T1-T12		T1-T13	
Site	Calgary (n, %)	12	11	91.67%	11	91.67%	11	91.67%	11	91.67%	11	91.67%	11	91.67%	11	91.67%
	Edmonton (n, %)	12	6	50.00%	7	58.33%	7	58.33%	7	58.33%	8	66.67%	8	66.67%	8	66.67%
	Ottawa (n, %)	10	3	30.00%	3	30.00%	4	40.00%	5	50.00%	5	50.00%	6	60.00%	6	60.00%
	Total (n, %)	34	20	58.82%	21	61.76%	22	64.71%	23	67.65%	24	70.59%	25	73.53%	25	73.53%
	Chi-square p-value	34	0.010		0.012		0.035		0.080		0.095		0.196		0.196	
	95% CI Calgary vs Edmonton	24	9.8% to 74.0%		1.4% to 65.3%		1.3% to 65.3%		–		–		–		–	
	95% CI Calgary vs Ottawa	22	29.2% to 94.1%		29.2% to 94.1%		17.5% to 85.8%		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	−20.1% to 60.1%		−11.4% to 68.1%		−22.9% to 59.6%		–		–		–		–	
Profession	Case manager (n, %)	9	7	77.78%	7	77.78%	7	77.78%	7	77.78%	8	88.89%	8	88.89%	8	88.89%
	Family physician (n, %)	12	4	33.33%	5	41.67%	5	41.67%	6	50.00%	6	50.00%	7	58.33%	7	58.33%
	Geriatric specialist (n, %)	13	9	69.23%	9	69.23%	10	76.92%	10	76.92%	10	76.92%	10	76.92%	10	76.92%
	Total (n, %)	34	20	58.82%	21	61.76%	22	64.71%	23	67.65%	24	70.59%	25	73.53%	25	73.53%
	Chi-square p-value	34	0.077		0.189		0.116		0.267		0.125		0.274		0.274	
	95% CI CM vs FP	21	–		–		–		–		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		–		–		–		–	

Figure 21. Future planning and related services identified, time-to-event by site
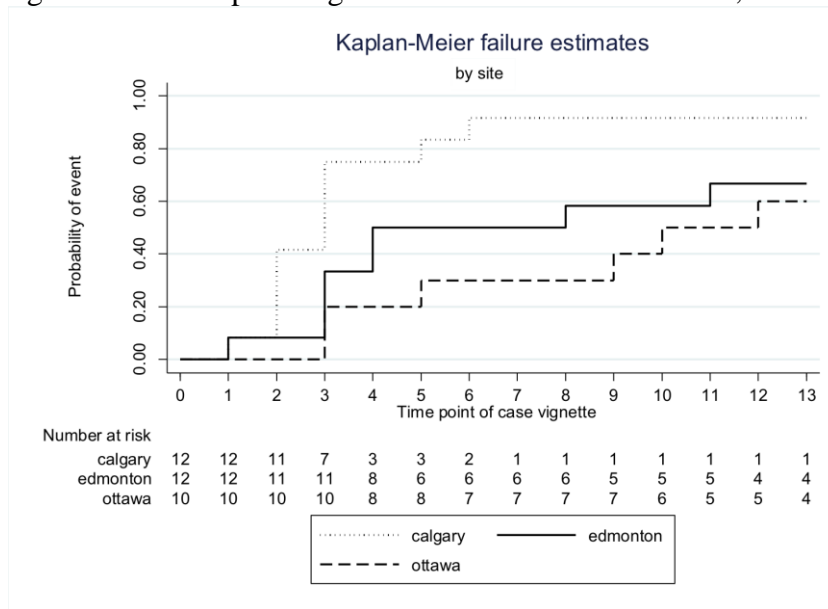
Log-rank test, p=0.0121

Figure 22. Future planning and related services identified, time-to-event by role
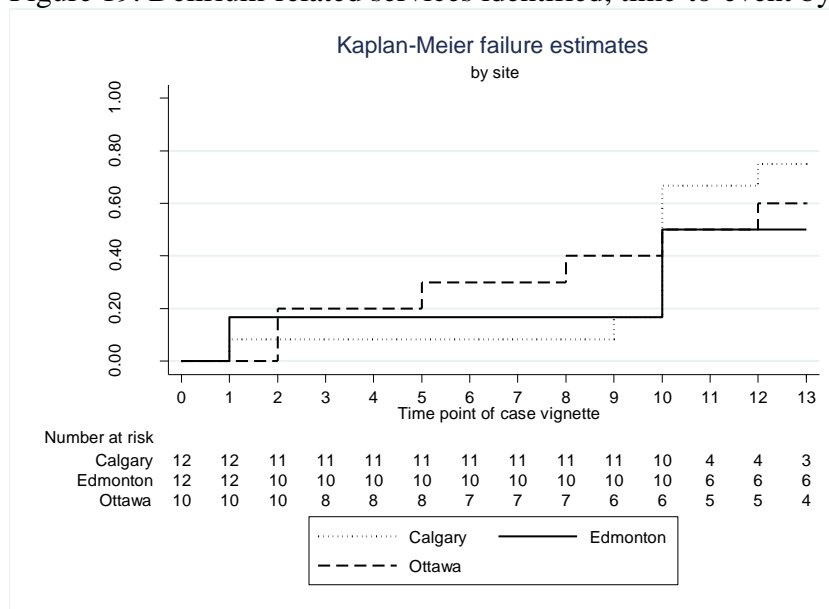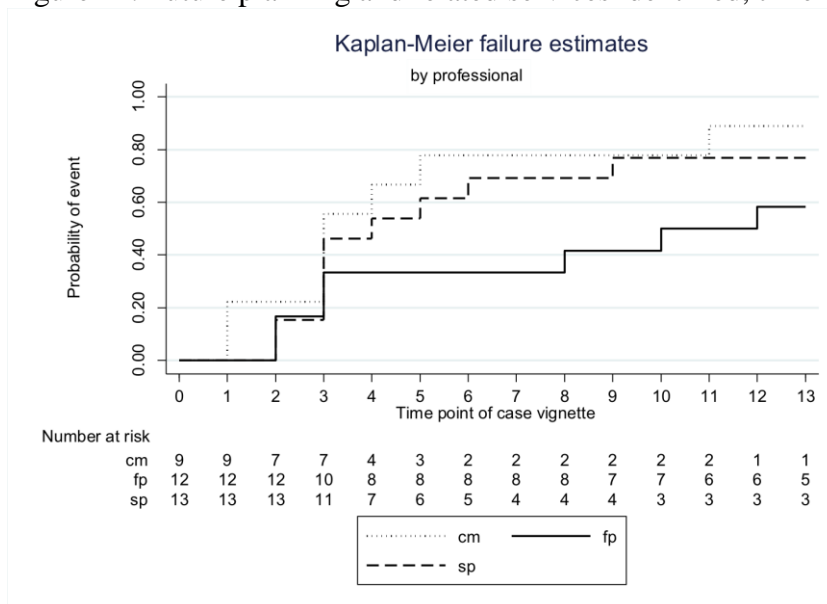

Log-rank test, p=0.2044

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Figure 23. Bipartite graph of informal support network, identified at each time
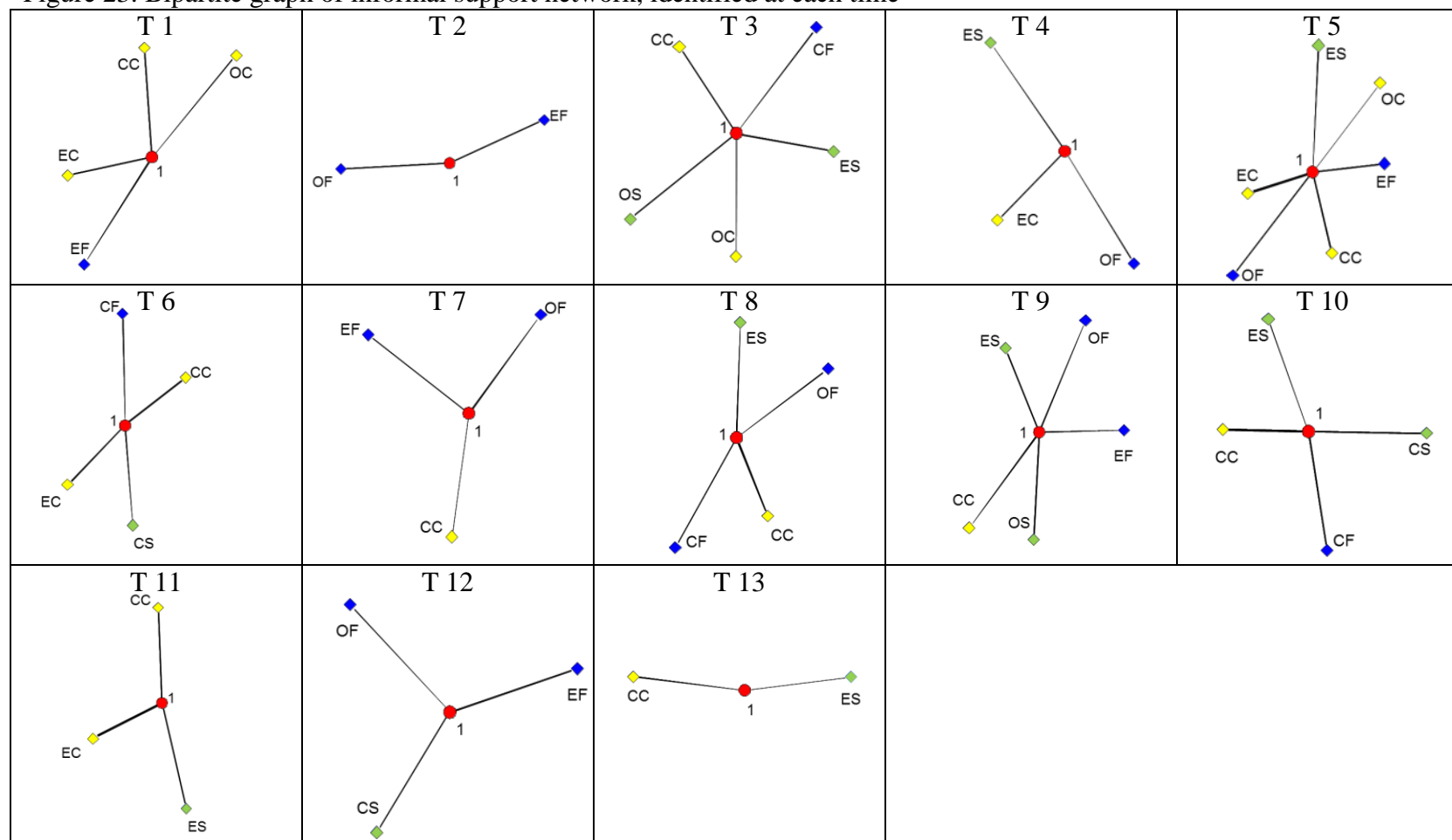
Legend for figure 23 and 24:

Node 1=Family and friends

Figure 24. Bipartite graph of informal support network, identified cumulatively
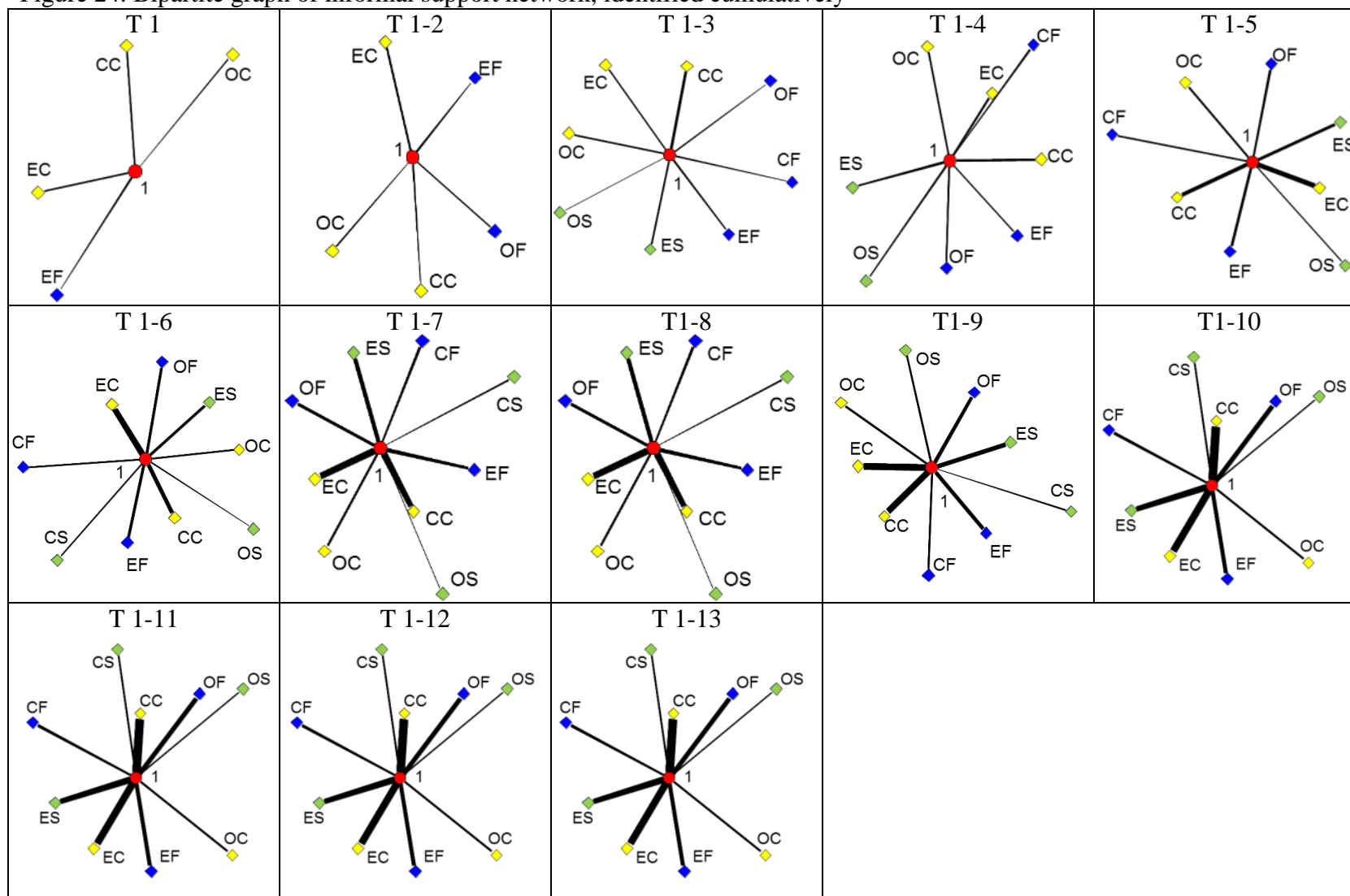
Table 10. Proportion of informal support networks, identified at each time

		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	1	8.33%	0	0.00%	3	25.00%	0	0.00%	2	16.67%	4	33.33%
	Edmonton (n, %)	12	3	25.00%	1	8.33%	2	16.67%	3	25.00%	7	58.33%	2	16.67%
	Ottawa (n, %)	10	1	10.00%	1	10.00%	2	20.00%	1	10.00%	2	20.00%	0	0.00%
	Total (n, %)	34	5	14.71%	2	5.88%	7	20.59%	4	11.76%	11	32.35%	6	17.65%
	Chi-square p-value	34	0.454		0.553		0.879		0.161		0.056		0.124	
	95% CI of the difference Calgary vs Edmonton	24	—		—		—		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	—		—		—		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	—		—		—		—		—		—	
Profession	Case manager (n, %)	9	4	44.44%	0	0.00%	3	33.33%	2	22.22%	7	77.78%	4	44.44%
	Family physician (n, %)	12	1	8.33%	2	16.67%	1	8.33%	1	8.33%	3	25.00%	1	8.33%
	Geriatric specialist (n, %)	13	0	0.00%	0	0.00%	3	23.08%	1	7.69%	1	7.69%	1	7.69%
	Total (n, %)	34	5	14.71%	2	5.88%	7	20.59%	4	11.76%	11	32.35%	6	17.65%
	Chi-square p-value	34	0.011		0.143		0.360		0.524		0.002		0.049	
	95% CI of the difference CM vs FP	21	0.08% to 72.1%		—		—		—		16.2% to 89.4%		0.08% to 72.1%	
	95% CI of the difference CM vs SP	22	12.0% to 76.9%		—		—		—		39.3% to 100.0%		1.2% to 72.3%	
	95% CI of the difference FP vs SP	25	−7.3% to 24.0%		—		—		—		−11.1% to 45.8%		−20.7% to 22.0%	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	1	8.33%	3	25.00%	1	8.33%	5	41.67%	2	16.67%	1	8.33%	1	8.33%
	Edmonton (n, %)	12	1	8.33%	1	8.33%	3	25.00%	1	8.33%	4	33.33%	1	8.33%	1	8.33%
	Ottawa (n, %)	10	1	10.00%	1	10.00%	2	20.00%	0	0.00%	0	0.00%	1	10.00%	0	0.00%
	Total (n, %)	34	3	8.82%	5	14.71%	6	17.65%	6	17.65%	6	17.65%	3	8.82%	2	5.88%
	Chi-square p-value	34	0.988		0.454		0.549		0.022		0.124		0.988		0.642	
	95% CI of the difference Calgary vs Edmonton	24	—		—		—		1.3% to 65.3%		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	—		—		—		13.8% to 69.6%		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	—		—		—		−7.3% to 24.0%		—		—		—	
Profession	Case manager (n, %)	9	1	11.11%	2	22.22%	1	11.11%	3	33.33%	5	55.56%	0	0.00%	1	11.11%
	Family physician (n, %)	12	2	16.67%	2	16.67%	2	16.67%	1	8.33%	0	0.00%	2	16.67%	0	0.00%
	Geriatric specialist (n, %)	13	0	0.00%	1	7.69%	3	23.08%	2	15.38%	1	7.69%	1	7.69%	1	7.69%
	Total (n, %)	34	3	8.82%	5	14.71%	6	17.65%	6	17.65%	6	17.65%	3	8.82%	2	5.88%
	Chi-square p-value	34	0.327		0.621		0.765		0.319		0.002		0.405		0.530	
	95% CI of the difference CM vs FP	21	—		—		—		—		23.1% to 88.0%		—		—	
	95% CI of the difference CM vs SP	22	—		—		—		—		12.3% to 83.4%		—		—	
	95% CI of the difference FP vs SP	25	—		—		—		—		−22.2% to 6.8%		—		—	

Table 11. Proportion of informal support networks, identified cumulatively

		no.	T1		T1-T2		T1-T3		T1-T4		T1-T5		T1-T6	
Site	Calgary (n, %)	12	1	8.33%	1	8.33%	3	25.00%	3	25.00%	4	33.33%	6	50.00%
	Edmonton (n, %)	12	3	25.00%	3	25.00%	5	41.67%	7	58.33%	9	75.00%	9	75.00%
	Ottawa (n, %)	10	1	10.00%	2	20.00%	3	30.00%	4	40.00%	5	50.00%	5	50.00%
	Total (n, %)	34	5	14.71%	6	17.65%	11	32.35%	14	41.18%	18	52.94%	20	58.82%
	Chi-square p-value	34	0.454		0.549		0.671		0.252		0.121		0.367	
	95% CI of the difference Calgary vs Edmonton	24	—		—		—		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	—		—		—		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	—		—		—		—		—		—	
Profession	Case manager (n, %)	9	4	44.44%	4	44.44%	5	55.56%	6	66.67%	8	88.89%	8	88.89%
	Family physician (n, %)	12	1	8.33%	2	16.67%	3	25.00%	4	33.33%	6	50.00%	7	58.33%
	Geriatric specialist (n, %)	13	0	0.00%	0	0.00%	3	23.08%	4	30.77%	4	30.77%	5	38.46%
	Total (n, %)	34	5	14.71%	6	17.65%	11	32.35%	14	41.18%	18	52.94%	20	58.82%
	Chi-square p-value	34	0.011		0.027		0.221		0.192		0.026		0.061	
	95% CI of the difference CM vs FP	21	0.08% to 72.1%		−10.9% to 66.5%		—		—		3.9% to 73.8%		—	
	95% CI of the difference CM vs SP	22	12.0% to 76.9%		12.0% to 76.9%		—		—		25.7% to 90.5%		—	
	95% CI of the difference FP vs SP	25	−7.3% to 24.0%		−4.4% to 37.8%		—		—		−18.6% to 57.0%		—	

		no.	T1-T7		T1-T8		T1-T9		T1-T10		T1-T11		T1-T12		T1-T13	
Site	Calgary (n, %)	12	6	50.00%	6	50.00%	6	50.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%
	Edmonton (n, %)	12	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%
	Ottawa (n, %)	10	6	60.00%	6	60.00%	7	70.00%	7	70.00%	7	70.00%	7	70.00%	7	70.00%
	Total (n, %)	34	21	61.76%	21	61.76%	22	64.71%	25	73.53%	25	73.53%	25	73.53%	25	73.53%
	Chi-square p-value	34	0.448		0.448		0.403		0.956		0.956		0.956		0.956	
	95% CI of the difference Calgary vs Edmonton	24	—		—		—		—		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	—		—		—		—		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	—		—		—		—		—		—		—	
Profession	Case manager (n, %)	9	8	88.89%	8	88.89%	8	88.89%	9	100.00%	9	100.00%	9	100.00%	9	100.00%
	Family physician (n, %)	12	8	66.67%	8	66.67%	8	66.67%	9	75.00%	9	75.00%	9	75.00%	9	75.00%
	Geriatric specialist (n, %)	13	5	38.46%	5	38.46%	6	46.15%	7	53.85%	7	53.85%	7	53.85%	7	53.85%
	Total (n, %)	34	21	61.76%	21	61.76%	22	64.71%	25	73.53%	25	73.53%	25	73.53%	25	73.53%
	Chi-square p-value	34	0.052		0.052		0.117		0.054		0.054		0.054		0.054	
	95% CI of the difference CM vs FP	21	—		—		—		—		—		—		—	
	95% CI of the difference CM vs SP	22	—		—		—		—		—		—		—	
	95% CI of the difference FP vs SP	25	—		—		—		—		—		—		—	

Figure 25. Informal support networks identified, time-to-event by site
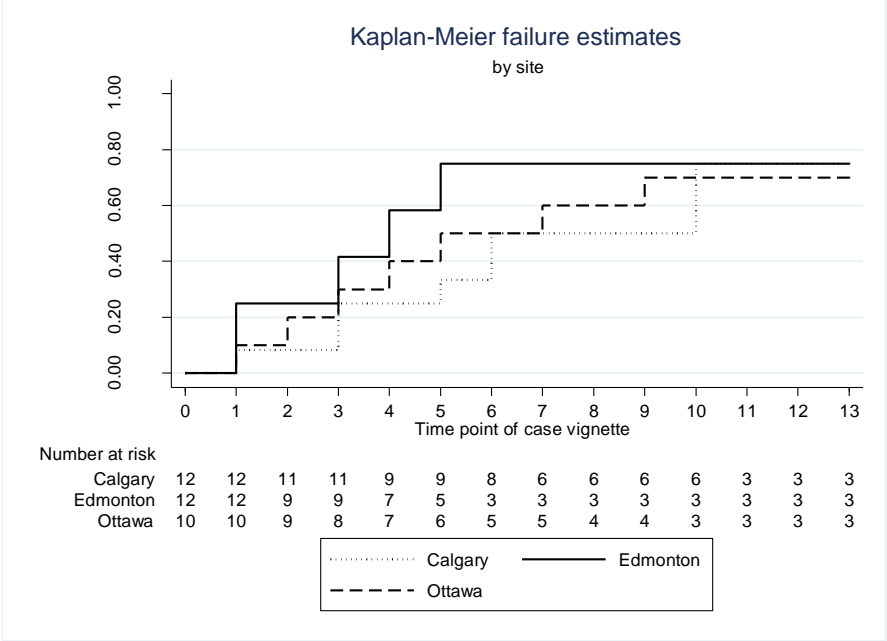
Log-rank test, p=0.6703

Figure 26. Informal support networks identified, time-to-event by role
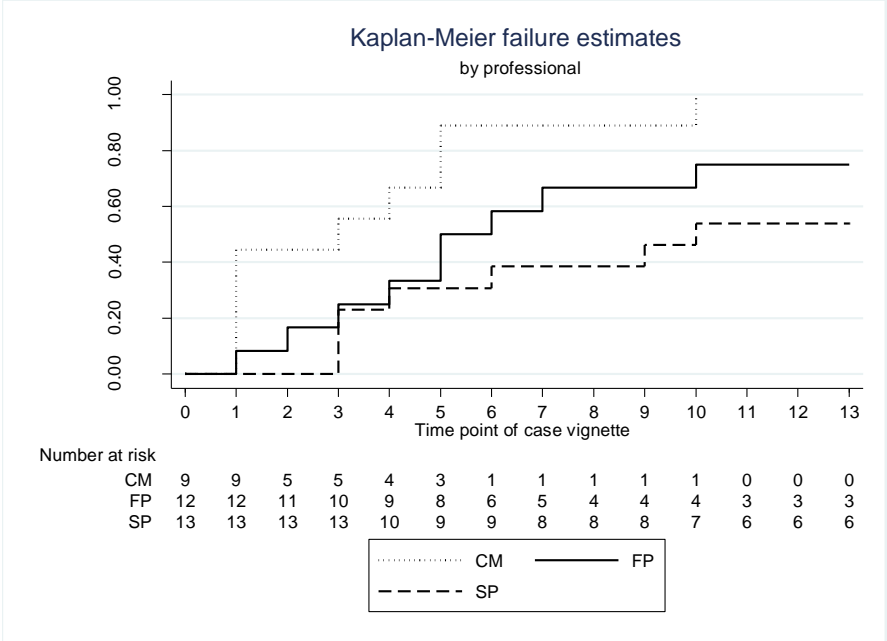
Log-rank test, p=0.0084

Table 12. Proportion of Alzheimer Society-related services, identified at each time

		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	6	50.00%	4	33.33%	7	58.33%	2	16.67%	7	58.33%	4	33.33%
	Edmonton (n, %)	12	1	8.33%	1	8.33%	4	33.33%	1	8.33%	8	66.67%	2	16.67%
	Ottawa (n, %)	10	0	0.00%	1	10.00%	6	60.00%	3	30.00%	5	50.00%	0	0.00%
	Total (n, %)	34	7	20.59%	6	17.65%	17	50.00%	6	17.65%	20	58.82%	6	17.65%
	Chi-square p-value	34	0.007		0.207		0.356		0.412		0.731		0.124	
	95% CI of the difference Calgary vs Edmonton	24	9.3% to 74%		—		—		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	21.7% to 78.3%		—		—		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	−7.3% to 78.3%		—		—		—		—		—	
Profession	Case manager (n, %)	9	4	44.44%	3	33.33%	5	55.56%	1	11.11%	5	55.56%	3	33.33%
	Family physician (n, %)	12	1	8.33%	0	0.00%	5	41.67%	3	25.00%	5	41.67%	2	16.67%
	Geriatric specialist (n, %)	13	2	15.38%	3	23.08%	7	53.85%	2	15.38%	10	76.92%	1	7.69%
	Total (n, %)	34	7	20.59%	6	17.65%	17	50.00%	6	17.65%	20	58.82%	6	17.65%
	Chi-square p-value	34	0.108		0.113		0.771		0.685		0.196		0.298	
	95% CI of the difference CM vs FP	21	—		—		—		—		—		—	
	95% CI of the difference CM vs SP	22	—		—		—		—		—		—	
	95% CI of the difference FP vs SP	25	—		—		—		—		—		—	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	3	25.00%	2	16.67%	4	33.33%	1	8.33%	1	8.33%	2	16.67%	2	16.67%
	Edmonton (n, %)	12	1	8.33%	3	25.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	16.67%
	Ottawa (n, %)	10	1	10.00%	2	20.00%	0	0.00%	0	0.00%	1	10.00%	0	0.00%	1	10.00%
	Total (n, %)	34	5	14.71%	7	20.59%	4	11.76%	1	2.94%	2	5.88%	2	5.88%	5	14.71%
	Chi-square p-value	34	0.454		0.879		0.016		0.389		0.553		0.143		0.652	
	95% CI of the difference Calgary vs Edmonton	24	—		—		6.7% to 60.0%		—		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	—		—		6.7% to 60.0%		—		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	—		—		—		—		—		—		—	
Profession	Case manager (n, %)	9	2	22.22%	2	22.22%	3	33.33%	1	11.11%	0	0.00%	1	11.11%	0	0.00%
	Family physician (n, %)	12	1	8.33%	2	16.67%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	16.67%
	Geriatric specialist (n, %)	13	2	15.38%	3	23.08%	1	7.69%	0	0.00%	2	15.38%	1	7.69%	3	23.08%
	Total (n, %)	34	5	14.71%	7	20.59%	4	11.76%	1	2.94%	2	5.88%	2	5.88%	5	14.71%
	Chi-square p-value	34	0.671		0.915		0.054		0.239		0.180		0.530		0.765	
	95% CI of the difference CM vs FP	21	—		—		—		—		—		—		—	
	95% CI of the difference CM vs SP	22	—		—		—		—		—		—		—	
	95% CI of the difference FP vs SP	25	—		—		—		—		—		—		—	

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Table 13. Proportion of Alzheimer Society-related services, identified cumulatively

		no.	T1		T1-T2		T1-T3		T1-T4		T1-T5		T1-T6	
Site	Calgary (n, %)	12	6	50.00%	8	66.67%	10	83.33%	11	91.67%	12	100.00%	12	100.00%
	Edmonton (n, %)	12	1	8.33%	2	16.67%	6	50.00%	7	58.33%	11	91.67%	11	91.67%
	Ottawa (n, %)	10	0	0.00%	1	10.00%	6	60.00%	8	80.00%	9	90.00%	9	90.00%
	Total (n, %)	34	7	20.59%	11	32.35%	22	64.71%	26	76.47%	32	94.12%	32	94.12%
	Chi-square p-value	34	0.007		0.006		0.217		0.149		0.553		0.553	
	95% CI of the difference Calgary vs Edmonton	24	9.3% to 74.0%		16.0% to 84%		—		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	21.7% to 78.3%		24.2% to 89.2%		—		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	−7.3% to 24.0%		−21.4% to 34.8%		—		—		—		—	
Profession	Case manager (n, %)	9	4	44.44%	6	66.67%	8	88.89%	8	88.89%	9	100.00%	9	100.00%
	Family physician (n, %)	12	1	8.33%	1	8.33%	6	50.00%	8	66.67%	11	91.67%	11	91.67%
	Geriatric specialist (n, %)	13	2	15.38%	4	30.77%	8	61.54%	10	76.92%	12	92.31%	12	92.31%
	Total (n, %)	34	7	20.59%	11	32.35%	22	64.71%	26	76.47%	32	94.12%	32	94.12%
	Chi-square p-value	34	0.108		0.018		0.174		0.493		0.681		0.681	
	95% CI of the difference CM vs FP	21	—		23.8% to 92.8%		—		—		—		—	
	95% CI of the difference CM vs SP	22	—		−3.8% to 75.6%		—		—		—		—	
	95% CI of the difference FP vs SP	25	—		−52.0% to 7.1%		—		—		—		—	

		no.	T1-T7		T1-T8		T1-T9		T1-T10		T1-T11		T1-T12		T1-T13	
Site	Calgary (n, %)	12	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%
	Edmonton (n, %)	12	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%
	Ottawa (n, %)	10	9	90.00%	10	100.00%	10	100.00%	10	100.00%	10	100.00%	10	100.00%	10	100.00%
	Total (n, %)	34	33	97.06%	34	100.00%	34	100.00%	34	100.00%	34	100.00%	34	100.00%	34	100.00%
	Chi-square p-value	34	0.290		—		—		—		—		—		—	
	95% CI of the difference Calgary vs Edmonton	24	—		—		—		—		—		—		—	
	95% CI of the difference Calgary vs Ottawa	22	—		—		—		—		—		—		—	
	95% CI of the difference Edmonton vs Ottawa	22	—		—		—		—		—		—		—	
Profession	Case manager (n, %)	9	9	100.00%	9	100.00%	9	100.00%	9	100.00%	9	100.00%	9	100.00%	9	100.00%
	Family physician (n, %)	12	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%
	Geriatric specialist (n, %)	13	12	92.31%	13	100.00%	13	100.00%	13	100.00%	13	100.00%	13	100.00%	13	100.00%
	Total (n, %)	34	33	97.06%	34	100.00%	34	100.00%	34	100.00%	34	100.00%	34	100.00%	34	100.00%
	Chi-square p-value	34	0.435		—		—		—		—		—		—	
	95% CI of the difference CM vs FP	21	—		—		—		—		—		—		—	
	95% CI of the difference CM vs SP	22	—		—		—		—		—		—		—	
	95% CI of the difference FP vs SP	25	—		—		—		—		—		—		—	

Figure 27. Alzheimer Society-related services identified, time-to-event by site
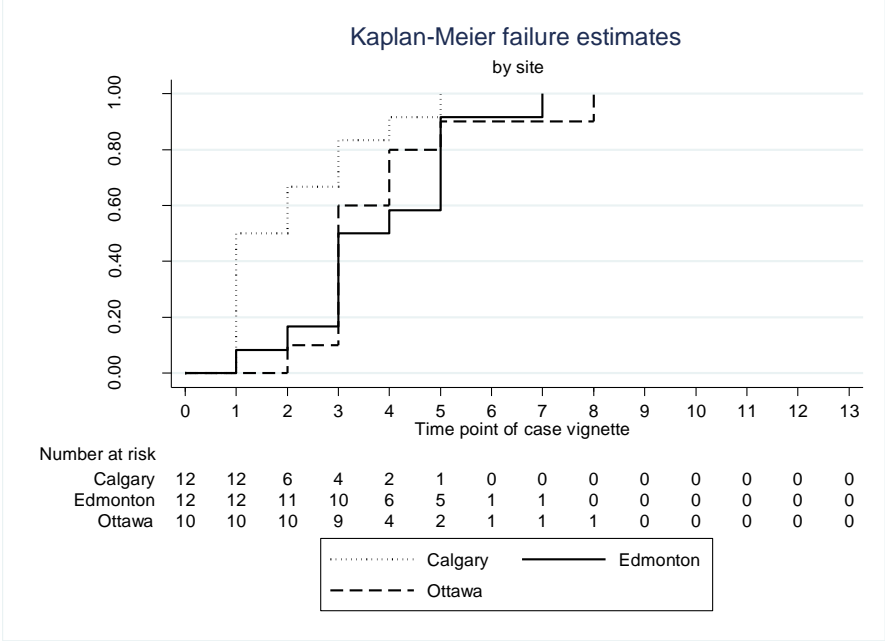
Log-rank test, p=0.0152

Figure 28. Alzheimer Society-related services identified, time-to-event by role
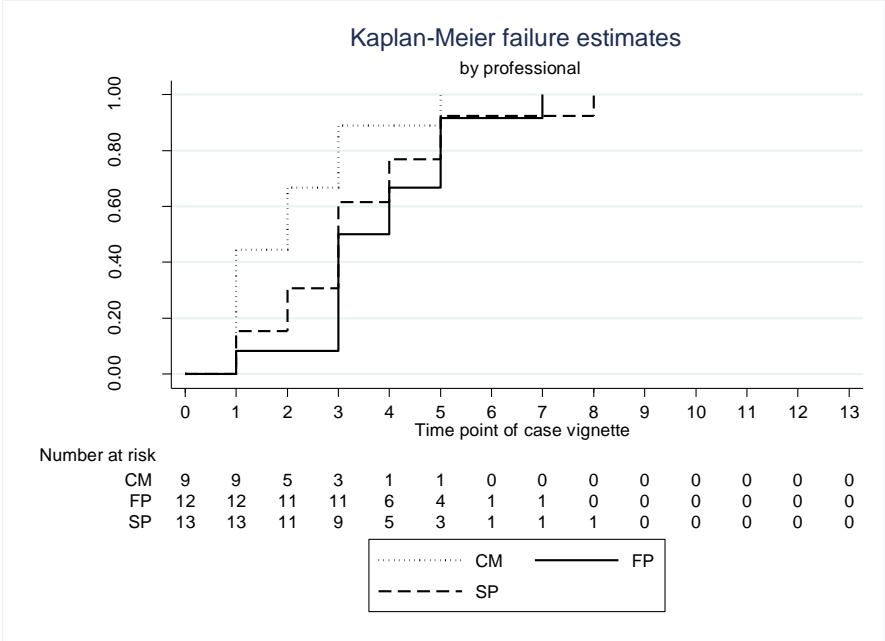
Log-rank test, p=0.0581

Table 14. Proportion of in-home support services, identified at each time

		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	0	0.00%	0	0.00%	1	8.33%	2	16.67%	7	58.33%	0	0.00%
	Edmonton (n, %)	12	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	50.00%	2	16.67%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	30.00%	1	10.00%
	Total (n, %)	34	0	0.00%	0	0.00%	1	2.94%	2	5.88%	16	47.06%	3	8.82%
	Chi-square p-value	34	–		–		0.389		0.143		0.402		0.351	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	1	11.11%	0	0.00%	5	55.56%	0	0.00%
	Family physician (n, %)	12	0	0.00%	0	0.00%	0	0.00%	1	8.33%	6	50.00%	2	16.67%
	Geriatric specialist (n, %)	13	0	0.00%	0	0.00%	0	0.00%	1	7.69%	5	38.46%	1	7.69%
	Total (n, %)	34	0	0.00%	0	0.00%	1	2.94%	2	5.88%	16	47.06%	3	8.82%
	Chi-square p-value	34	–		–		0.239		0.681		0.709		0.405	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	8	66.67%	4	33.33%	5	41.67%	1	8.33%	1	8.33%	0	0.00%	0	0.00%
	Edmonton (n, %)	12	5	41.67%	4	33.33%	4	33.33%	0	0.00%	1	8.33%	0	0.00%	0	0.00%
	Ottawa (n, %)	10	5	50.00%	1	10.00%	5	50.00%	2	20.00%	0	0.00%	0	0.00%	0	0.00%
	Total (n, %)	34	18	52.94%	9	26.47%	14	41.18%	3	8.82%	2	5.88%	0	0.00%	0	0.00%
	Chi-square p-value	34	0.460		0.373		0.731		0.257		0.642		–		–	
	95% CI Calgary vs Edmonton	24	–		–		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		–		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		–		–		–		–		–		–	
Profession	Case manager (n, %)	9	7	77.78%	7	77.78%	6	66.67%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Family physician (n, %)	12	6	50.00%	2	16.67%	4	33.33%	0	0.00%	2	16.67%	0	0.00%	0	0.00%
	Geriatric specialist (n, %)	13	5	38.46%	0	0.00%	4	30.77%	3	23.08%	0	0.00%	0	0.00%	0	0.00%
	Total (n, %)	34	18	52.94%	9	26.47%	14	41.18%	3	8.82%	2	5.88%	0	0.00%	0	0.00%
	Chi-square p-value	34	0.186		<0.001		0.192		0.070		0.143		–		–	
	95% CI CM vs FP	21	–		26.7% to 95.5%		–		–		–		–		–	
	95% CI CM vs SP	22	–		50.6% to 100%		–		–		–		–		–	
	95% CI FP vs SP	25	–		–4.4% to 37.8%		–		–		–		–		–	

Table 15. Proportion of in-home support services, identified cumulatively

		no.	T1		T1-T2		T1-T3		T1-T4		T1-T5		T1-T6	
Site	Calgary (n, %)	12	0	0.00%	0	0.00%	1	8.33%	3	25.00%	8	66.67%	8	66.67%
	Edmonton (n, %)	12	0	0.00%	0	0.00%	0	0.00%	0	0.00%	6	50.00%	6	50.00%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3	30.00%	3	30.00%
	Total (n, %)	34	0	0.00%	0	0.00%	1	2.94%	3	8.82%	17	50.00%	17	50.00%
	Chi-square p-value	34	–		–		0.389		0.049		0.231		0.231	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		0.5% to 49.55		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		0.5% to 49.55		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	1	11.11%	1	11.11%	5	55.56%	5	55.56%
	Family physician (n, %)	12	0	0.00%	0	0.00%	0	0.00%	1	8.33%	6	50.00%	6	50.00%
	Geriatric specialist (n, %)	13	0	0.00%	0	0.00%	0	0.00%	1	7.69%	6	46.15%	6	46.15%
	Total (n, %)	34	0	0.00%	0	0.00%	1	2.94%	3	8.82%	17	50.00%	17	50.00%
	Chi-square p-value	34	–		–		0.239		0.959		0.910		0.910	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T1-T7		T1-T8		T1-T9		T1-T10		T1-T11		T1-T12		T1-T13	
Site	Calgary (n, %)	12	10	83.33%	11	91.67%	11	91.67%	12	100.00%	12	100.00%	12	100.00%	12	100.00%
	Edmonton (n, %)	12	8	66.67%	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%
	Ottawa (n, %)	10	6	60.00%	6	60.00%	7	70.00%	9	90.00%	9	90.00%	9	90.00%	9	90.00%
	Total (n, %)	34	24	70.59%	26	76.47%	27	79.41%	30	88.24%	30	88.24%	30	88.24%	30	88.24%
	Chi-square p-value	34	0.457		0.216		0.409		0.161		0.161		0.161		0.161	
	95% CI Calgary vs Edmonton	24	–		–		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		–		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		–		–		–		–		–		–	
Profession	Case manager (n, %)	9	8	88.89%	9	100.00%	9	100.00%	9	100.00%	9	100.00%	9	100.00%	9	100.00%
	Family physician (n, %)	12	9	75.00%	10	83.33%	10	83.33%	10	83.33%	10	83.33%	10	83.33%	10	83.33%
	Geriatric specialist (n, %)	13	7	53.85%	7	53.85%	8	61.54%	11	84.62%	11	84.62%	11	84.62%	11	84.62%
	Total (n, %)	34	24	70.59%	26	76.47%	27	79.41%	30	88.24%	30	88.24%	30	88.24%	30	88.24%
	Chi-square p-value	34	0.190		0.034		0.083		0.440		0.440		0.440		0.440	
	95% CI CM vs FP	21	–		–4.4% to 37.8%		–		–		–		–		–	
	95% CI CM vs SP	22	–		19.1% to 73.3%		–		–		–		–		–	
	95% CI FP vs SP	25	–		–4.8% to 63.8%		–		–		–		–		–	

Figure 29. In-home support services identified, time-to-event by site

Kaplan-Meier failure estimates
by site

Number at risk

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Calgary	12	12	12	12	11	9	4	4	2	1	1	0	0	0
Edmonton	12	12	12	12	12	12	6	6	4	3	3	3	3	3
Ottawa	10	10	10	10	10	10	7	7	4	4	3	1	1	1
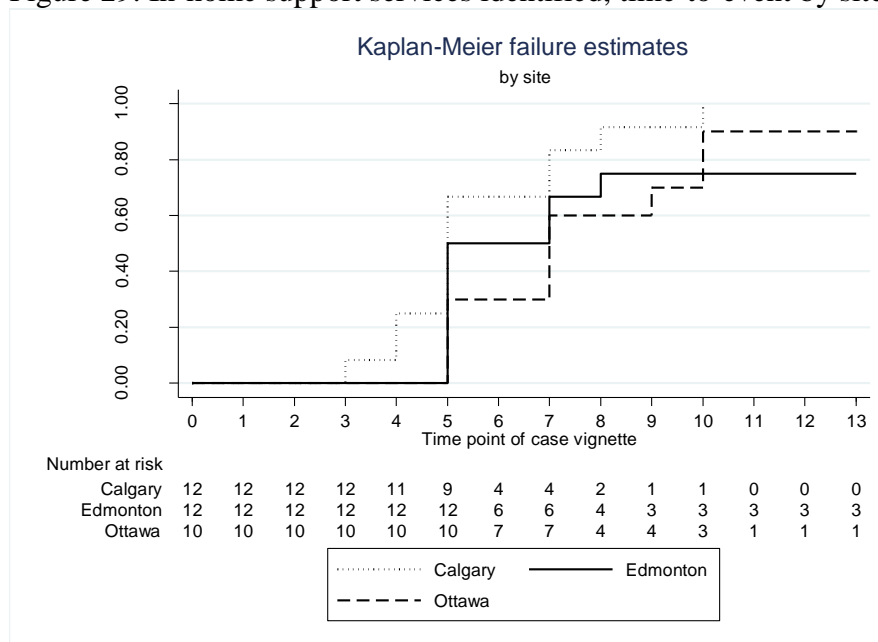
Log-rank test, p=0.0814

Figure 30. In-home support services identified, time-to-event by role

Kaplan-Meier failure estimates
by professional

Number at risk

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
CM	9	9	9	9	8	8	4	4	1	0	0	0	0	0
FP	12	12	12	12	12	11	6	6	3	2	2	2	2	2
SP	13	13	13	13	13	12	7	7	6	6	5	2	2	2
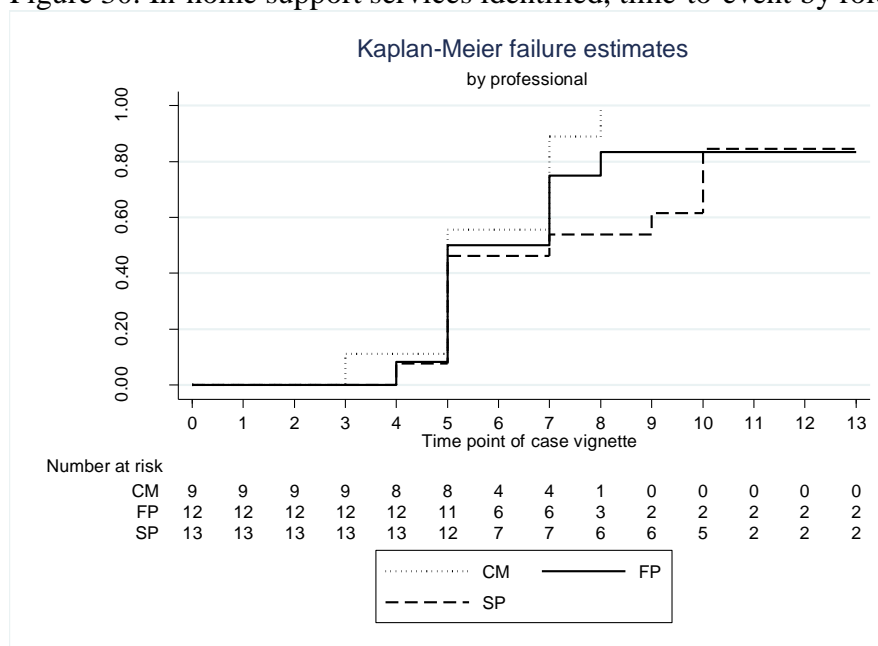
Log-rank test, p=0.2363

Figure 31. Bipartite graph of day program services, identified at each time
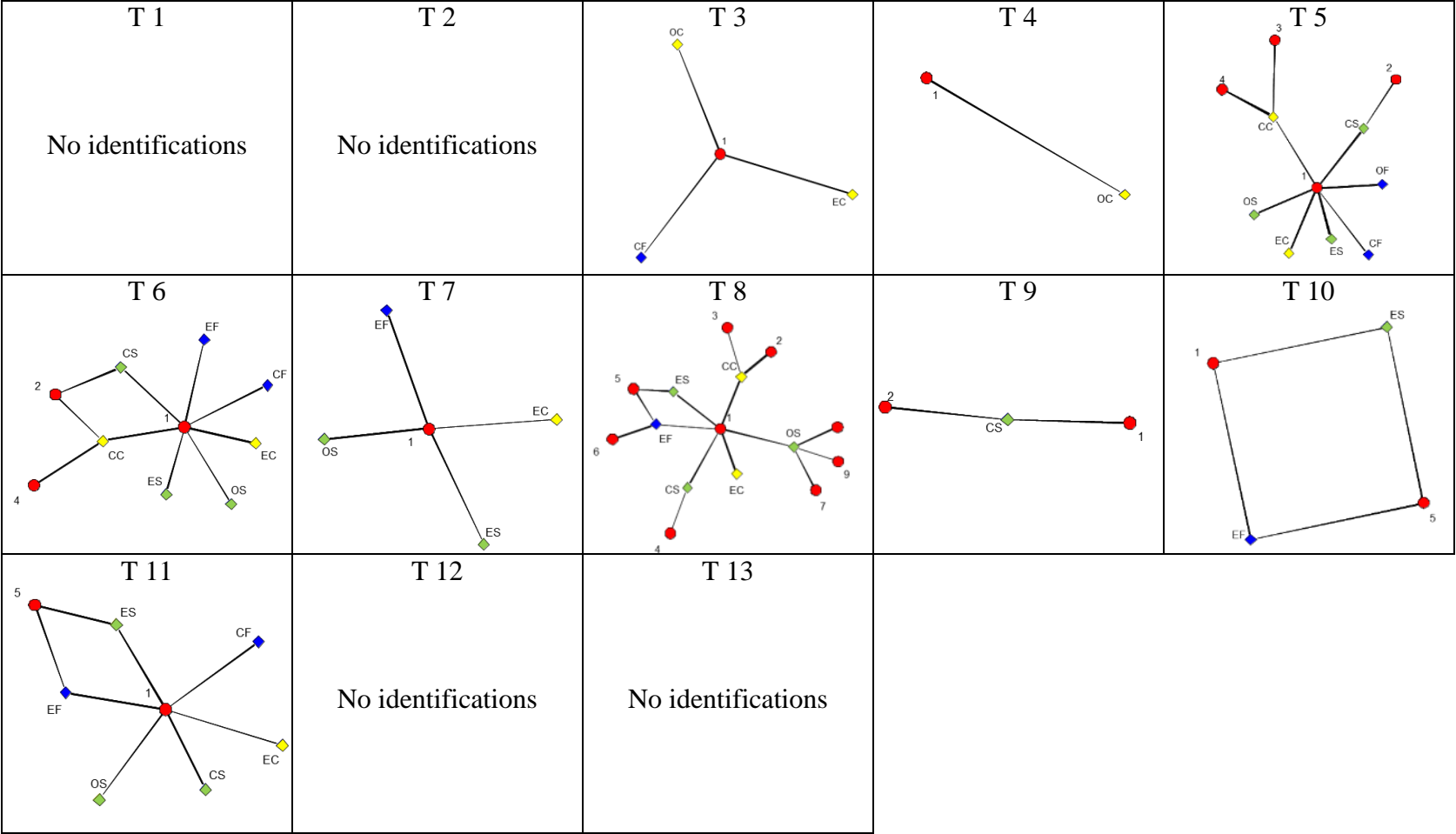
Figure 32. Bipartite graph of day program services, identified cumulatively

T 1	T 1-2	T 1-3	T 1-4	T 1-5
No identifications	No identifications			

T 1-6	T 1-7	T1-8	T1-9	T1-10

T 1-11	T 1-12	T 1-13

169
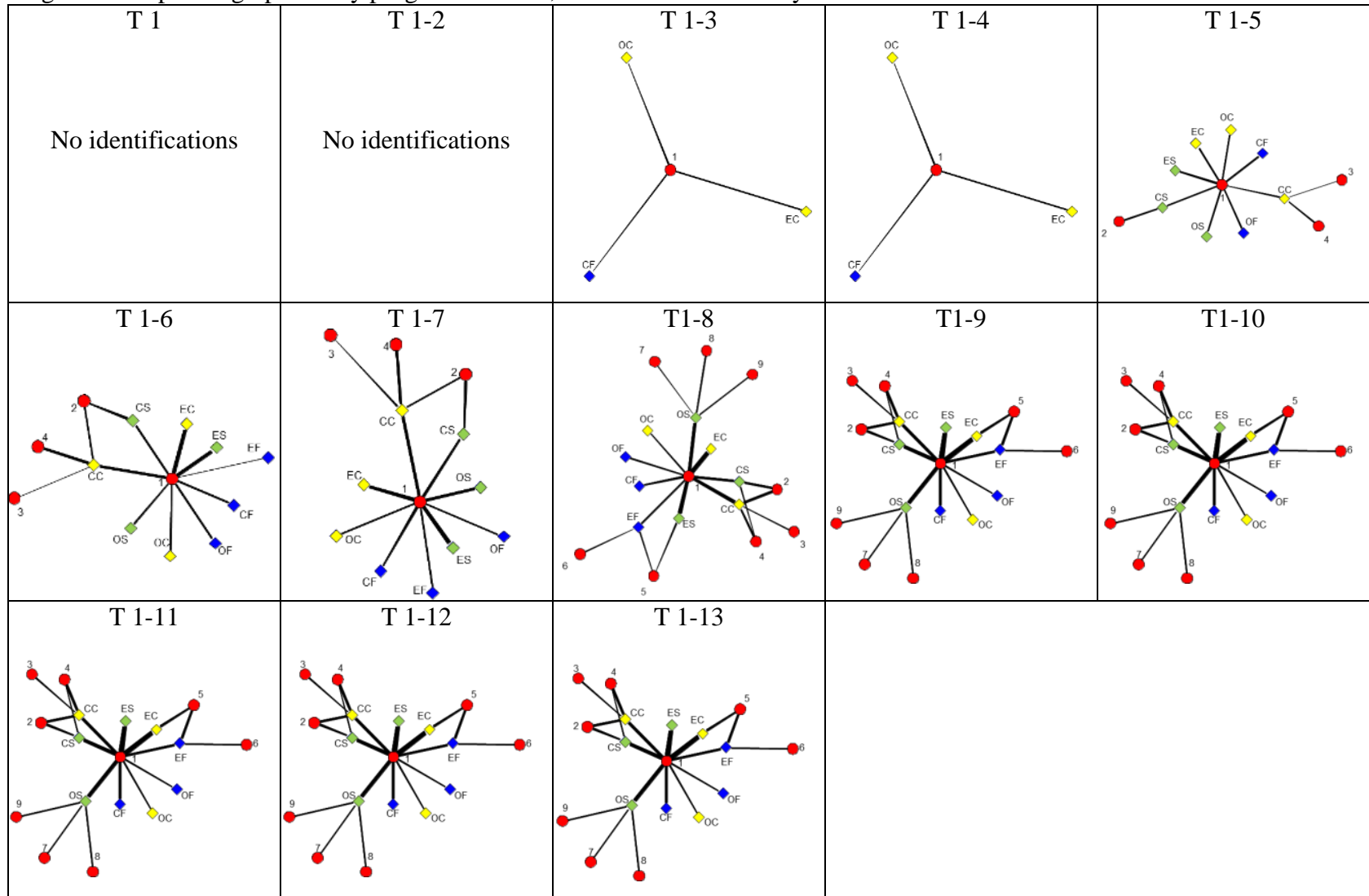
Legend for figure 31 and 32:

Node 1=Day program (general)
Node 2=ADSP
Node 3=Club 36
Node 4=Dealing with Dementia
Node 5=CHOICE
Node 6=St Michael's
Node 7=Centre Champlain
Node 8=Centre de Services Guigues
Node 9=Residence St Louis

Table 16. Proportion of day program services, identified at each time

|		no.	T1		T2		T3		T4		T5		T6	
Site	Calgary (n, %)	12	0	0.00%	0	0.00%	1	8.33%	0	0.00%	7	58.33%	5	41.67%
	Edmonton (n, %)	12	0	0.00%	0	0.00%	1	8.33%	0	0.00%	5	41.67%	5	41.67%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	1	10.00%	1	10.00%	4	40.00%	1	10.00%
	Total (n, %)	34	0	0.00%	0	0.00%	3	8.82%	1	2.94%	16	47.06%	11	32.35%
	Chi-square p-value	34	–		–		0.988		0.290		0.621		0.198	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	2	22.22%	1	11.11%	5	55.56%	5	55.56%
	Family physician (n, %)	12	0	0.00%	0	0.00%	1	8.33%	0	0.00%	3	25.00%	2	16.67%
	Geriatric specialist (n, %)	13	0	0.00%	0	0.00%	0	0.00%	0	0.00%	8	61.54%	4	30.77%
	Total (n, %)	34	0	0.00%	0	0.00%	3	8.82%	1	2.94%	16	47.06%	11	32.35%
	Chi-square p-value	34	–		–		0.195		0.239		0.157		0.167	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T7		T8		T9		T10		T11		T12		T13	
Site	Calgary (n, %)	12	0	0.00%	5	41.67%	3	25.00%	1	8.33%	0	0.00%	0	0.00%	0	0.00%
	Edmonton (n, %)	12	3	25.00%	5	41.67%	6	50.00%	0	0.00%	2	16.67%	0	0.00%	0	0.00%
	Ottawa (n, %)	10	2	20.00%	1	10.00%	1	10.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Total (n, %)	34	5	14.71%	11	32.35%	10	29.41%	1	2.94%	2	5.88%	0	0.00%	0	0.00%
	Chi-square p-value	34	0.191		0.198		0.112		0.389		0.143		–		–	
	95% CI Calgary vs Edmonton	24	–		–		–		–		–		–		–	
	95% CI Calgary vs Ottawa	22	–		–		–		–		–		–		–	
	95% CI Edmonton vs Ottawa	22	–		–		–		–		–		–		–	
Profession	Case manager (n, %)	9	1	11.11%	5	55.56%	1	11.11%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
	Family physician (n, %)	12	1	8.33%	1	8.33%	3	25.00%	0	0.00%	1	8.33%	0	0.00%	0	0.00%
	Geriatric specialist (n, %)	13	3	23.08%	5	38.46%	6	46.15%	1	7.69%	1	7.69%	0	0.00%	0	0.00%
	Total (n, %)	34	5	14.71%	11	32.35%	10	29.41%	1	2.94%	2	5.88%	0	0.00%	0	0.00%
	Chi-square p-value	34	0.547		0.061		0.190		0.435		0.681		–		–	
	95% CI CM vs FP	21	–		–		–		–		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		–		–		–		–	

Table 17. Proportion of day program services, identified cumulatively

		no.	T1 n	T1 %	T1-T2 n	T1-T2 %	T1-T3 n	T1-T3 %	T1-T4 n	T1-T4 %	T1-T5 n	T1-T5 %	T1-T6 n	T1-T6 %
Site	Calgary (n, %)	12	0	0.00%	0	0.00%	1	8.33%	1	8.33%	8	66.67%	9	75.00%
	Edmonton (n, %)	12	0	0.00%	0	0.00%	1	8.33%	1	8.33%	5	41.67%	7	58.33%
	Ottawa (n, %)	10	0	0.00%	0	0.00%	1	10.00%	1	10.00%	5	50.00%	6	60.00%
	Total (n, %)	34	0	0.00%	0	0.00%	3	8.82%	3	8.82%	18	52.94%	22	64.71%
	Chi-square p-value	34	–		–		0.988		0.988		0.460		0.648	
	95% CI of the difference Calgary vs Edmonton	24	–		–		–		–		–		–	
	95% CI of the difference Calgary vs Ottawa	22	–		–		–		–		–		–	
	95% CI of the difference Edmonton vs Ottawa	22	–		–		–		–		–		–	
Profession	Case manager (n, %)	9	0	0.00%	0	0.00%	2	22.22%	2	22.22%	6	66.67%	7	77.78%
	Family physician (n, %)	12	0	0.00%	0	0.00%	1	8.33%	1	8.33%	4	33.33%	6	50.00%
	Geriatric specialist (n, %)	13	0	0.00%	0	0.00%	0	0.00%	0	0.00%	8	61.54%	9	69.23%
	Total (n, %)	34	0	0.00%	0	0.00%	3	8.82%	3	8.82%	18	52.94%	22	64.71%
	Chi-square p-value	34	–		–		0.195		0.195		0.232		0.382	
	95% CI of the difference CM vs FP	21	–		–		–		–		–		–	
	95% CI of the difference CM vs SP	22	–		–		–		–		–		–	
	95% CI of the difference FP vs SP	25	–		–		–		–		–		–	

		no.	T1-T7 n	T1-T7 %	T1-T8 n	T1-T8 %	T1-T9 n	T1-T9 %	T1-T10 n	T1-T10 %	T1-T11 n	T1-T11 %	T1-T12 n	T1-T12 %	T1-T13 n	T1-T13 %
Site	Calgary (n, %)	12	9	75.00%	11	91.67%	12	100.00%	12	100.00%	12	100.00%	12	100.00%	12	100.00%
	Edmonton (n, %)	12	9	75.00%	11	91.67%	11	91.67%	11	91.67%	11	91.67%	11	91.67%	11	91.67%
	Ottawa (n, %)	10	6	60.00%	6	60.00%	6	60.00%	6	60.00%	6	60.00%	6	60.00%	6	60.00%
	Total (n, %)	34	24	70.59%	28	82.35%	29	85.29%	29	85.29%	29	85.29%	29	85.29%	29	85.29%
	Chi-square p-value	34	0.682		0.088		0.023		0.023		0.023		0.023		0.023	
	95% CI Calgary vs Edmonton	24	–		–		–7.3 to 24.0%		–7.3 to 24.0%		–7.3 to 24.0%		–7.3 to 24.0%		–7.3 to 24.0%	
	95% CI Calgary vs Ottawa	22	–		–		9.6 to 70.4%		9.6 to 70.4%		9.6 to 70.4%		9.6 to 70.4%		9.6 to 70.4%	
	95% CI Edmonton vs Ottawa	22	–		–		–2.4 to 65.8%		–2.4 to 65.8%		–2.4 to 65.8%		–2.4 to 65.8%		–2.4 to 65.8%	
Profession	Case manager (n, %)	9	7	77.78%	9	100.00%	9	100.00%	9	100.00%	9	100.00%	9	100.00%	9	100.00%
	Family physician (n, %)	12	7	58.33%	8	66.67%	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%
	Geriatric specialist (n, %)	13	10	76.92%	11	84.62%	11	84.62%	11	84.62%	11	84.62%	11	84.62%	11	84.62%
	Total (n, %)	34	24	70.59%	28	82.35%	29	85.29%	29	85.29%	29	85.29%	29	85.29%	29	85.29%
	Chi-square p-value	34	0.511		0.135		0.277		0.277		0.277		0.277		0.277	
	95% CI CM vs FP	21	–		–		–		–		–		–		–	
	95% CI CM vs SP	22	–		–		–		–		–		–		–	
	95% CI FP vs SP	25	–		–		–		–		–		–		–	

Figure 33. Day programs identified, time-to-event by site
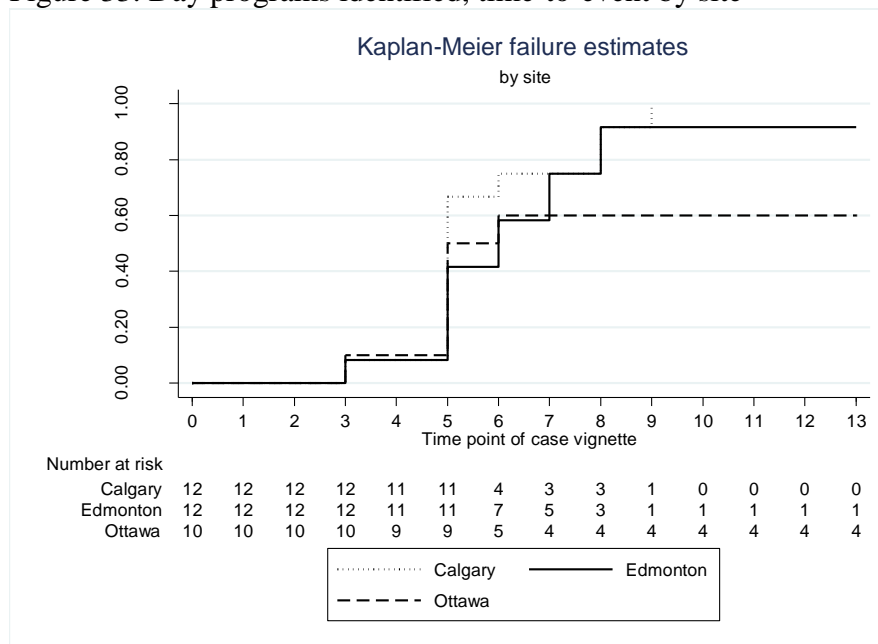
Log-rank test, p=0.2005

Figure 34. Day programs identified, time-to-event by role

Log-rank test, p=0.184