

# Developing a Comprehensive Geriatric Genogram Assessment Tool

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**ABSTRACT:** **Background:** The use of graphic depictions (pictorials) to represent medical conditions is an accepted method that can complement standard methodology of comprehensive geriatric assessment.

**Objectives:** To use the clinical pathway method to develop a comprehensive geriatric genogram assessment tool (CGGAT), which could supplement a written summary letter and recommendations.

**Methods:** We used the critical paths method to develop a tool to facilitate implementation of the comprehensive geriatric assessment recommendations. A multidisciplinary group of clinicians used the critical pathways method to develop a CGGAT.

**Results:** We used the CGGAT to depict the physical and functional status of patients and to complement the textual historical information, family dynamics, and current patient issues. CGGAT is a simple instrument that provides a visual structure and it can facilitate the sharing of information among team members, encourage interdisciplinary dialogue, enhance understanding and adherence on the part of patients and professionals, and reduce the burden on the clinicians who conduct the initial comprehensive geriatric assessment.

**Conclusions:** We showed the benefits and obstacles related to the adaptation of this new tool and provide recommendations for further development.

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**KEY WORDS:** clinical pathway, comprehensive geriatric assessment (CGA), elderly, genogram

or screening tests for central assessment domains, the team decides whether to refer the patient to an expanded team. This expanded team should include physical and occupational therapists, nutritionists, pharmacists, and psychiatrists.

During the CGA, patients undergo various tests, including a functional assessment of basic activities of daily living (e.g., the Barthel Index [2]), assessment of instrumental activities of daily living (e.g., the Older Americans Resources and Services Activity of Daily Living scale [3]), a cognitive assessment (e.g., the Mini-Mental State Examination [4] or Clock Drawing Test [5]), an assessment of symptoms of depression (e.g., the Patient Health Questionnaire [6]), a nutritional assessment (e.g., the Mini Nutritional Assessment [7]), a balance and mobility assessment (e.g., Timed Up and Go test [8]), and co-morbidity indices (e.g., the Charlson Comorbidity Index [9]). In addition, the caregiver's burden is often evaluated by the Zarit Burden Inventory (ZBI [10]). An essential part of the process is the medication reconciliation [11].

The implementation of CGA recommendations can benefit both patients and the healthcare system. However, the CGA process is challenging and difficult because of its length, the scope of domains, the duration, and the diversity of professionals involved in the process. While a large body of important information can be gathered during the process, different studies have shown that the adherence rates for CGA recommendations are as low as 49–79% [12–14]. Thus, a critical challenge is to convey CGA recommendations to healthcare providers in a manner that facilitates their implementation.

## PATIENTS AND METHODS

We used the critical paths (CP) method to develop a tool to facilitate implementation of the CGA recommendations. The CP method involves two steps. First, critical tasks and interdisciplinary processes are identified. Second, standardized key elements are documented to ensure standard of care for patients and provide an overview of the entire care process. This step includes different sources of information such as the results of assessments, consultations and diagnostic tests, and outcomes

A comprehensive geriatric assessment (CGA) is defined as a multidimensional interdisciplinary diagnostic process used to delineate the medical, functional, psychosocial, nutritional, and environmental needs of an elderly patient. A CGA also is used to develop a comprehensive plan for care and long-term follow-up [1].

A CGA requires contributions from many healthcare professionals. The core team should consist of a geriatrician, a nurse, and a social worker. Following a brief initial assessment

of interventions [15]. The CP method is considered the best practice tool for organizing and integrating different levels of healthcare. Using the CP method, our multidisciplinary group developed a Comprehensive Geriatric Genogram Assessment tool (CGGAT), which can supplement the CGA written summary letter and list of recommendations. Our group included a geriatric physician, two family physicians, and a healthcare social worker. We identified critical tasks, diagnostic tests, and interdisciplinary processes related to the medical, functional, psychosocial, nutritional, and environmental state of the elderly patient. A symbol was matched to each domain based on domain characteristics (test result, functional state, and emotional relationship). The usual genogram symbols [1] were used to represent family structure, family history, household members, significant dates, and relationships among family members [16].

**RESULTS**

Figure 1 shows our CGGAT worksheet and Figure S1 shows the symbols that were included in our CGGAT. All icons were downloaded (with permission) from Flaticon (www.flaticon.com). The genogram was drawn using the GenoPro software program (https://www.genopro.com/). GenoPro can facilitate the presentation of essential information about the patient and other family members by integrating both the genogram technique, which describes family structure and relationships among family members [16], and a series of symbols that describe fundamental geriatric conditions. The medical genogram can then be used for recording information about patients and families. It has a standard format to present family history and structure for at least three generations and to identify the type of bonds between family members and nonrelative household members and the individual characteristics of key family members. The genogram includes the primary medical problems of all family members; dates of marriages, divorces, deaths; and cause of death.

A genogram can also be used to verify whether there are recurrent relationship patterns and emotional or physical disruptions. The genogram originated within the discipline of family assessment and family therapy, and has been adapted to the needs of other healthcare settings such as genetic risk, sexuality, forensics, identification of cardiovascular risk, evaluation of needs, resources in end-of-life situations and bereavement, and care of patients with dementia [17-23]. There is a general consensus that the genogram is a valuable tool for assessments of complex situations.

**HYPOTHETICAL CASE STUDY**



We demonstrated the use of the CGGAT with a hypothetical case study. In our hypothetical case, Mr. David Cohen, was referred for CGA by his family physician due to memory

**Figure 1.** Comprehensive geriatric genogram worksheet


**Comprehensive Geriatric Genogram worksheet**

Patient Name: \_\_\_\_\_ Address: \_\_\_\_\_  
 Phone No: \_\_\_\_\_ Referrer: \_\_\_\_\_ Date: \_\_\_\_\_

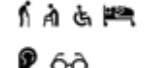
**Legal issues:**

 Y/N 


**Medical issues:**




**Functional issues:**



**Financial issues:**



**Environmental & Social issues:**



Draw the patient genogram and ecomap here

Test	Date / score	Date / score	Date / score	Geriatric syndrome	Date
MMSE <sup>a</sup>					
CTD <sup>b</sup>					
PHQ <sup>c</sup>					
Barthel Index					
IADL <sup>d</sup>					
TU&G <sup>f</sup>					
MNA <sup>e</sup>					
Charlson's Score					
ZBI <sup>g</sup>					

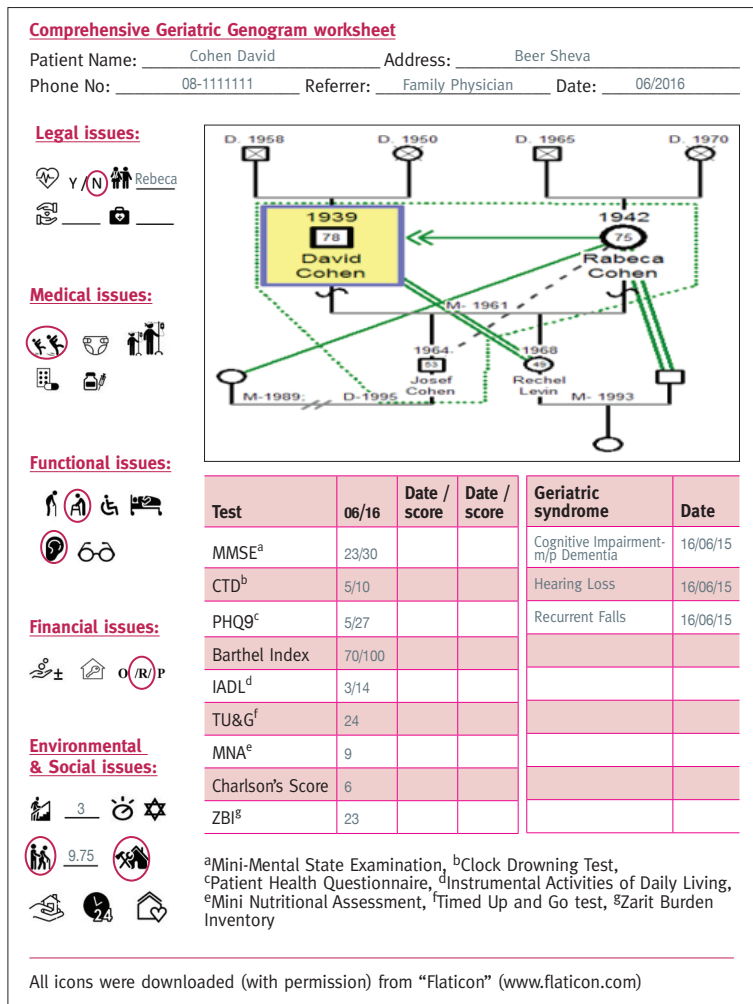
<sup>a</sup>Mini-Mental State Examination, <sup>b</sup>Clock Drowning Test, <sup>c</sup>Patient Health Questionnaire, <sup>d</sup>Instrumental Activities of Daily Living, <sup>e</sup>Mini Nutritional Assessment, <sup>f</sup>Timed Up and Go test, <sup>g</sup>Zarit Burden Inventory

All icons were downloaded (with permission) from "Flaticon" (www.flaticon.com)

problems, general deterioration in everyday coping abilities, and recurrent falls. During the first visit David was assessed by a nurse, a social worker, an occupational therapist, and a geriatric physician. Figure 2 shows how the CGGAT was used to present the information collected at the first CGA.

In the genogram Mr. Cohen, a 78-year-old patient, is represented by a double square figure at his first visit to the geriatric clinic. As shown by the curved line under his name, he married Rebecca in 1961, after both immigrated to Israel. The Cohen couple's parents died, as shown by the cross and the year above their names, indicating both the fact that they are deceased and the year they died. The Cohen couple have two adult children (Rachel and Josef). Their son is divorced and their daughter is married and has one daughter. Mr. Cohen, his wife, and his son, live in the same house, as depicted by the dotted line surrounding them. Their daughter lives with her family in a separate house.

Figure 2. Sample CGGAT worksheet, first visit summary



The ecomap is a diagram that shows the social and personal relationships of an individual with his or her environment. In our example the ecomap shows that Rebeca was the primary caregiver. Their relationship focused on David's needs, as manifested by the arrow in the genogram. David had a close relationship with their daughter, Rachel, while Rebeca had a close relationship with their son-in-law and a more distant relationship with Josef, their son. Rebeca also had a close relationship with her son's ex-wife who lived nearby. The nature of the relationship between David and his son is not clear at this stage of the assessment. The ecomap indicates that the son and daughter might find it difficult to support their parents in light of the challenges posed by David's condition.

Gathering the medical, functional, environmental, social, and financial information at the CGA is presented together on the left side of the CGGAT [Figure 2].

David has no legal guardian or medical power of attorney, as shown by the empty blank lines linked to both symbols. The

circled "No," linked to the treatment preference symbol reflects that his end-of-life treatment preferences were not clarified.

During the interview, it became clear that Rebeca was David's primary caregiver, as shown in the ecomap [Figure 2]. This information is encoded by indicating her name beside the primary caregiver symbol. The ZBI score signifies a mild to moderate burden. The current structure of the document supports the presentation of information about Rebeca, the planning of interventions, and the formulation of recommendations based on her ZBI score.

**MEDICAL ASPECTS**

Tables of the diagnoses and tests are presented below the genogram, providing current medical information [Figure 2]. Cognitive impairment, hearing loss, recurrent falls, and risk for malnutrition are the geriatric syndromes diagnosed. The icon for stumbling is circled on the left, representing an increased risk for falls. Mr. Cohen has limited mobility, as indicated by the circled walker symbol, and uses a hearing aid.

The Cohens live in a rented apartment. Their income is above the average in Israel, as indicated by the circled sign that is linked to the income symbol. The Cohens live in an apartment on the third floor without an elevator, as indicated by the circled stairs symbol. The number that is linked to the income symbol indicates the floor where they live.

Based on this assessment, the apartment needs to be adjusted to David's physical condition, as indicated by the circled repair house icon.

**SOCIAL ISSUES**

David is a Holocaust survivor, as indicated by the circled Star of David on the left. In Israel, this guarantees him unique rights if he becomes disabled; therefore, this information is important for all of his healthcare providers. He is entitled to 9.75 hours of home nursing care each week, as part of his right to long-term insurance. This benefit is indicated by the circle around the nursing symbol. The numbers besides the symbol represent the level of his entitlement. The Barthel test result and the other functional information presented indicate the need to submit a claim for supplemental rights.

**RECOMMENDATIONS AND FOLLOW-UP BASED ON THE OUTCOME OF THE CGGAT**

At the end of the assessment process, several recommendations were made to the family and the primary care team. These suggestions related to environmental and social issues, including psychosocial interventions aimed at strengthening relationships among family members and providing support for Rebeca as the primary caregiver.

Figure 3 shows the CGGAT of the follow-up visit 6 months later. Comparing the two schemes, it is clear that major changes occurred. First, the relationship between Josef and Rebeca

improved and Josef became a source of support for his mother. Rachel was more involved as David's end-of-life treatment preferences were clarified, and she assumed the role of his medical power of attorney. The ecomap indicates that Rachel's relationship with both of her parents became much closer. Although Rebecca remained David's primary caregiver, the present ecomap indicates that the children became involved and supportive.

While the couple lived in a rented apartment, the circles around the repaired house symbol and the stairs symbol were removed, which indicated that the present apartment fits David's needs and there were not accessibility issues. David's entitlement to homecare within the framework of long-term insurance was increased to 19 hours per week, which addressed his state of physical deterioration and increased dependency. David's daily routine included visits to a geriatric daycare center. An emergency call button was installed in the apartment.

At the second visit [Figure 3], Rebecca's ZBI score reflects the benefits of the changes initiated after the first visit, as she shows a lower level of caregiver burden.

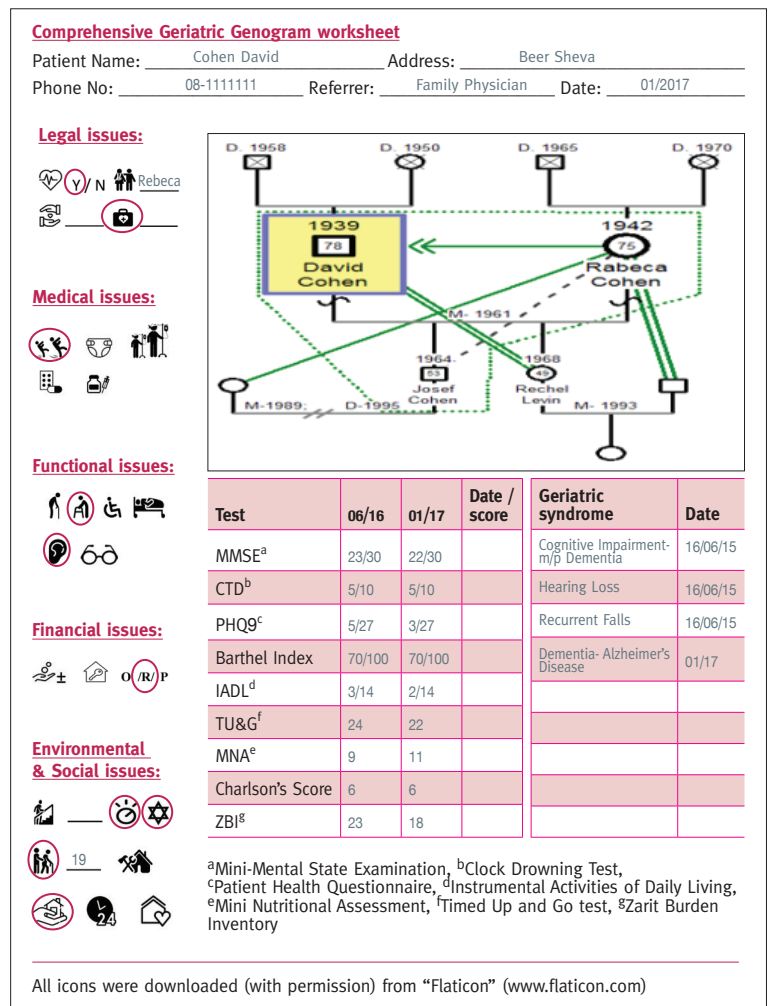
**DISCUSSION**

The CGGAT is a useful tool to summarize the status of elderly patients in several CGA domains including medical, physical, psychological, mental, nutritional, cognitive, social, economic, and environmental. There are many potential benefits to integrating CGGAT into the field of geriatric medicine. The CGGAT can capture a patient's historical information as well as the physical and functional status in one graphic depiction. The use of pictorials for the visual presentation of medical conditions is an accepted method that complements written reports. In addition, it can provide the medical staff with a tool that can help with the preparation of written reports [24], enhance communication between professionals and patients, and provide other medical staff members with a tool to recall verbal messages.

Successful implementation of CGA recommendations requires that both patients and caregivers understand the importance of making changes and the potential benefits. The use of pictorials to supplement written or spoken text, when compared to text alone, is a useful way to enhance patient comprehension of the recommendations by increasing their attention to health-related information [25]. The CGGAT pictorials could also serve to help healthcare providers who conduct the CGA to remember the multiple aspects of the patient's life and health concerns.

Since the CGA is a multidisciplinary assessment, use of a shared file to summarize the findings allows healthcare providers to use the information that was collected and, at the same time, provide new information. Seeing graphic illustrations of the main issues that should be considered during the CGA can also assist in identifying information gaps, determining needs and available resources to meet those needs, and setting treatment options. The systematic use of CGGAT could identify

**Figure 3.** Sample CGGAT workout, second visit




























details that might have been omitted during the interview and clarify them when possible. The CGGAT can be repeated as treatment progresses, documenting how the family adapts to changes over time.

**LIMITATIONS**

Although the CGGAT has important potential benefits, there also may be obstacles to its implementation. The integration of new techniques into clinical practice involves education and practice. Using the CGGAT might be a frustrating and time-consuming task at first. To make productive use of the pictorials and the genogram, a training period is required in which staff members can learn the new method and practice its use. In the future, a computerized version of the CGGAT could be integrated into the medical record. The advantages of a computerized version might include linking the pictorial and written versions, thus enabling users to understand the meaning of a specific icon or a specific issue by linking to the assessment

Figure S1. Geriatric symbol key

Medical issues		Primary caregiver aspects	
	Recurrent falls		Primary caregiver name
	Incontinence	Environmental & Social issues	
	Drug sensitivity		Entitlement for daily home care within the framework of long term insurance. The number indicates level of entitlement
	Repeated hospitalization		Entitlement for home care long term insurance - 24 hours' assistance.
	Polypharmacy		Resident in a building without an elevator. The number beside the icon indicates the apartment floor
Functional issues			Adjustment of housing conditions is required
	Cane dependent		Emergency call-button at home
	Walker dependent		Holocaust survivor
	Wheelchair dependent		Visiting a Geriatric day care center as part of the entitlement of long term insurance
	Bed ridden		Permanent residence in a nursing home
	Hearing aid dependent	Legal issues	
	Vision limitation		End of life treatment preference - yes or no
Financial issues		Yes/No	
	Level of income: +/- means above /below average income		The appointed guardian name. Blank line indicates no appointed guardian
	Residence ownership: O – private, R – free rent P – public rent		Medical power of attorney name. Blank line indicates no appointment

All icons were downloaded (with permission) from "Flaticon" (www.flaticon.com)

tool to a written reference. Such a pictorial assessment might eliminate the need for a long written medical summary.

**CONCLUSIONS**

Using the CGGAT to complement the written assessment could help to formulate a treatment plan and simplify the provision of medical information. It is a short, user-friendly way to discuss recommendations with patients, their primary care teams, and their families. In geriatric medicine, the treatment plan usually encompasses all aspects of the patient's life, as assessed during the CGA. Using the CGGAT can improve communication with primary care physicians and families, thus improving implementation rates for CGA-based geriatric recommendations.

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