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Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

COMPREHENSIVE GERIATRIC CARE IN HOSPITALS: THE ROLE OF INPATIENT GERIATRIC CONSULTATION TEAMS

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HEALTH SERVICES RESEARCH

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MIEKE DESCHODT, VEERLE CLAES, BASTIAAN VAN GROOTVEN, KOEN MILISEN, BENOIT BOLAND, JOHAN FLAMAING, ALAIN DENIS, FRANÇOIS DAUE, LUT MERGAERT, CARL DEVOS, PATRIEK MISTIAEN, KOEN VAN DEN HEEDE

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COLOPHON

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- **The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings. They did not co-author the scientific report and did not necessarily agree with its content.**
- **Subsequently, a (final) version was submitted to the validators. The validation of the report results from a consensus or a voting process between the validators. The validators did not co-author the scientific report and did not necessarily all three agree with its content.**
- **Finally, this report has been approved by common assent by the Executive Board.**
- **Only the KCE is responsible for errors or omissions that could persist. The policy recommendations are also under the full responsibility of the KCE.**

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LIST OF ABBREVIATIONS AND DEFINITIONS

ABBREVIATION	DEFINITION
ACE	Acute Care for the Elderly
ACOVE	Assessing Care Of Vulnerable Elders
ADL	Activities of Daily Living
APN	Advanced Practice Nurse
APR-DRG	All-patient refined diagnosis related groups
BFM/BMF	Budget of Financial Means
BVGG/SBGG	Belgian Association for Gerontology & Geriatrics
CGA	Comprehensive Geriatric Assessment
CLIC	Local Centers for Information and Coordination
CNEH	Conseil National des Etablissements Hospitaliers
CNS	Clinical Nurse Specialist
CTU	Care Team of Unit where patient is hospitalized
DRG	Diagnosis Related Group
ED	Emergency Department
FFS	Fee-for-service
FOD/SPF	Federal Public Service of Public Health
FTE	Full Time Equivalent
G-beds/G-units	Geriatric beds/units
GCN	Geriatric Care Network
GEMU	Geriatric Evaluation and Management Unit
GFR	Groningen Frailty Indicator
GL	Geriatric liaison
GP	General Practitioner
GRACE	Geriatric Resources for Assessment and Care of Elders
GRN	Geriatric Resource Nurse
HELP	Hospital Elder Life Program
I-ADL	Instrumental Activities of Daily Living
I-CVI	Item Content Validity Index

IADL	Instrumental Activities of Daily Living
ICU	Intensive Care Unit
IGAS	General Inspection of Social Affaires
IGCT	Inpatient Geriatric Consultation Team
ISAR-HP	Identification for Seniors At Risk – Hospitalized Patients
IT	Information technology
K*	Kappa statistic
LOS	Length-of-stay
MKG-RCM	Minimal Clinical Data
MZG-RHM	Belgian hospital discharge dataset
NIAZ	Dutch accreditation Institue for healthcare
NICHE	Nurses Improving Care for Health System Elders
Non-G unit	Non-geriatric unit
NRZV/CNEH	the National Council of Hospital Services
PEGU	Post-emergency geriatric units
PICO	Population, Intervention, Comparison and Outcome
QI	Quality Indicator
RCP	Royal College of Physicians
RCT	Randomized Controlled Trial
RIZIV/INAMI	National Institute for Health and Disability Insurance
ROM	Risk-of-mortality
S-CVI	Scale Content Validity Index
SFH	Senior Friendly Hospital
SHERPA	Score Hospitalier d'Evaluation du Risque de Perte d'Autonomie
SNF	Sub-acute Nursing Facility
SOI	Severity-of-illness
SSRI	Selective serotonin reuptake inhibitor
START	Screening Tool to Alert doctors to Right
STOPP	Screening Tool of Older People's potentially inappropriate Prescriptions

TCA	Ttricyclic antidepressants
THR	Total Hip replacemen
TRST	Triage Risk Screening Tool
UK	United Kingdom
USA	United States of America
VA	Veterans Affairs
VES	Vulnerable elder survey
VMS	Veiligheids Management Systeem (National Patient Safety Program)

SCIENTIFIC REPORT

1 INTRODUCTION

Chapter authors: K Van den Heede[a], P Mistiaen[a]

[a] Belgian Healthcare Knowledge Centre (KCE)

The overall aim of this project is to formulate recommendations for the organisation and payment for inpatient geriatric consultation teams. In this introductory chapter we describe the demographic context of the study (see 1.1); the concept of geriatric care (see 1.2) and the research objectives.

Disclaimer. This is an introductory chapter; the cited literature is not a result of a systematic literature review. The referenced literature is mainly based on a screening of existing studies and reports. In addition, ad-hoc searches were performed to complement this information. The structure of this chapter heavily relies on the structure of the first chapter of Deschodt (2014).[1]

1.1 An ageing (hospital) population

1.1.1 General demographic trend

The growing life expectancy and the decline in fertility will result in an ageing population throughout Europe that will rapidly expand in the next decades. The European population of older persons (65 years or older), represented 17.9% of the EU-27's population in 2012 but will account for 29.3 % by 2060.[2] A similar trend is expected in Belgium: 17.9% of the Belgian population is now (anno 2014) 65 years or older, a share that will increase to 25.8% by 2060.[3] Although the majority of older persons report to be in good health (i.e. self-perceived health status rated as good by 72 % and 57% of the persons in the age-groups 65-74 years and 75 or older, respectively)[4] there is also a growing burden of chronic conditions and multi-morbidity [5] These changes challenge our healthcare system. Not only will there be an increasing number of older persons that need health-care services, the healthcare services will have to be re-designed to accommodate the needs of persons with multiple chronic conditions.[5]

1.1.2 Ageing hospital population

The proportion of patients older than 75 years hospitalised on non-geriatric acute care units (non G-units)[a] is already relatively high (i.e. 27.24% of the patients in 2011). In addition, this patient group accounts for 43% of all hospitalisation days on acute non G-units. The group aged ≥85 years accounts (in 2011) for 9.19% and 16.25% of the patient and hospitalisation days, respectively. It is expected that this proportion of (very) old hospitalised persons will continue to grow in the next decades.[6]

The proportion of older patients in the hospital with a geriatric profile defined as functional decline at day 30, was found to be 39% in a Belgian study.[7] Another Belgian study in a subgroup of oncology patients aged 70 years and older from 10 hospitals revealed that 70% of them scored positive on initial screening and further geriatric assessment detected unknown geriatric problems in 51% of the patients.[8] A Dutch multi-center study[9] found prevalences of Instrumental Activities Daily Living (IADL) impairment (83%), polypharmacy (61%), mobility difficulty (59%), high levels of primary caregiver burden (53%), and malnutrition (52%) and a UK study [10] in older patients aged 75 and over, acutely admitted to a district general hospital in England found a prevalence of 56% that fulfilled the frailty criteria.

1.2 The geriatric care concept

1.2.1 Definition geriatric patients

Not all (hospitalized) older persons are geriatric patients. In a previous KCE report (KCE-report 73),[11] an overview was given about overlaps and differences in definitions of 'geriatric patients' as described in the international literature. A common denominator is that 'geriatric patients' are characterised by multiple problems (e.g. decreased homeostasis, multi-pathology, functional decline, psychosocial problems).[11] These elements are also included in the definition of 'geriatric medicine' as formulated by the geriatric section of the 'Union Européene des Médicins Spécialistes' which can be considered as a broadly supported definition by geriatricians in Europe (see text box).[12]

In this study, however, we adopt the description of the target group included in the Belgian care programme for geriatric patients (see Chapter 2): *"the care programme for geriatric patients targets patients with an average age ≥75[b] years who need a specific approach for the following reasons: a frailty profile, active multi-pathology, a limited homeostasis, atypical clinical appearances of diseases; disturbed pharmaco-kinetics, risk for functional decline; risk for malnutrition; trend to be inactive and bedridden, with an increased risk for institutionalisation and for dependency in activities of daily living; psychosocial problems."*[13]

[a] Source: linked database MZG/RHM and AZV/SHA by the TCT including all hospitalised patients (inpatient stays only, with exclusion of stays on N*, E, M, NIC, K, K1, K2 units)

[b] It should be noted that the age criterion in the care program is 'on average' older than 75 years. This implies that the care program also applies to younger patients if they have a geriatric profile

Definition Geriatric Medicine by 'the 'Union Européene des Médicins Spécialistes'[12]

"Geriatric Medicine is a specialty of medicine concerned with physical, mental, functional and social conditions in acute, chronic, rehabilitative, preventive, and end of life care in older patients.

This group of patients are considered to have a high degree of frailty and active multiple pathology, requiring a holistic approach. Diseases may present differently in old age, are often very difficult to diagnose, the response to treatment is often delayed and there is frequently a need for social support.

Geriatric Medicine therefore exceeds organ orientated medicine offering additional therapy in a multidisciplinary team setting, the main aim of which is to optimise the functional status of the older person and improve the quality of life and autonomy.

Geriatric Medicine is not specifically age defined but will deal with the typical morbidity found in older patients. Most patients will be over 65 years of age but the problems best dealt with by the speciality of Geriatric Medicine become much more common in the 80+ age group." [12]

1.2.2 Comprehensive geriatric care

Geriatric patients require a different approach than adult patients, the so-called comprehensive geriatric assessment (CGA), defined as: *"a multidimensional interdisciplinary process focusing on determining a frail older person's medical, psychosocial and functional capability in order to develop a coordinated and integrated plan for treatment and long-term follow-up"*.[1, 14] The term 'assessment' is somewhat misleading since CGA is both a diagnostic (i.e. identification of the geriatric care needs) and a therapeutic process (i.e. the delivery of interventions to meet those needs).[1, 14] According to Deschodt (2013)[1], the CGA-process includes three consecutive steps:

- Case-finding or screening. Screening instruments (e.g. ISAR or Identification of Senior At Risk; SHERPA or Score Hospitalier d'Evaluation du Risque de Perte d'Autonomie; Triage Risk Screening Tool or TRST)[11] or other factors (e.g. age, physical disease, geriatric syndromes, functional impairment and social problems) are used to identify high-risk populations for which a geriatric approach is needed.[1, 15, 16]
- Assessment. Patients identified as high-risk patients undergo a comprehensive assessment focusing on the multiple needs of geriatric patients (e.g. functional performance, cognitive performance, nutritional status, medical status, social issues) in order to be able to develop recommendations for the patients' care plan.[14]
- Implementing the recommendations. If geriatric syndromes or care problems are identified, appropriate evidence-based interventions need to be implemented.[1]

The CGA-process was evaluated by a meta-analysis[14, 17] including data from 22 RCTs and 10 315 patients and showed beneficial effects[c] (i.e. decreased hospital mortality, higher proportion of patients returning to home, improved cognitive functioning) of CGA compared with conventional care.

1.2.3 Geriatric care models

In the literature three broad models of care are described to implement CGA in the inpatient practice setting[14]:

- Acute geriatric units. CGA is delivered in a discrete unit by a coordinated specialist multidisciplinary team. Different names are used in the literature to label these units, depending on their scope on acute and/or rehabilitation care (e.g. acute care for elders or ACE units; geriatric evaluation and management units or GEMU; post-emergency geriatric units or PEGU).[14, 18] It has been shown that acute geriatric units have *beneficial effects on the outcomes of geriatric patients* compared to conventional care, including: fewer falls;[19] less delirium;[19] less institutionalisation;[14, 17] lower in-hospital mortality;[14, 17] less functional decline;[20, 21] and less new admissions in nursing homes.[21]

[c] Effects consistently shown for acute geriatric units but not for the geriatric consultation models.

- Inpatient geriatric consultation teams. A mobile team visits high-risk patients (e.g. identified by a screening procedure) admitted to non G-units to perform the assessment and to make recommendations to the treating physician/care team. These consultation teams are interchangeably referred to as 'inpatient geriatric consultation teams', 'geriatric liaison team', 'geriatric assessment team' and 'interdisciplinary geriatric consultation teams' in the literature. We will use the terminology 'inpatient geriatric consultation teams' or IGCT throughout the report to describe this model. A recent review by Deschodt et al. (2013)[22] including 12 studies (9 RCTs; 3 non-randomized controlled designs) showed that there is *no evidence for the clinical effectiveness* of inpatient geriatric consultation teams on patient's functional status, readmission rates and length of stay. At 6 and 8 months follow-up, significantly fewer intervention patients had died, but the effect on mortality at the other time points was not significant (1 month, 3 months, 1 year). The authors conclude that the lack of control over the implementation of the proposed intervention is likely to be the main limitation of this type of care.[22] In addition, the absence of evidence can potentially be explained by other factors such as the outcomes studied (distal outcomes that are influenced after patient discharge instead of outcomes for which the effects are more directly observable during the initial hospitalization, e.g. delirium; polymedication…); heterogeneity of interventions studied (e.g. composition of teams, frequency of interdisciplinary meetings and patient visits).
- Co-management model. This model was only recently introduced in the literature and mainly for ortho-geriatric patient populations.[23] It can be described as the most far-reaching model of shared care between a general treating physician and a geriatrician since they manage the patient together from admission until discharge and are both responsible for the process and outcome of provided care.[23] The first meta-analyses[24, 25] on shared care models for geriatric patients are being published, but are based on a limited body of small-scale studies and to date remain inconclusive about the effectiveness of this care model.

1.3 Research questions and study approach

This study focuses on 'the inpatient geriatric consultation team' model. A mixed-methods design is used by combining different quantitative and qualitative study approaches (i.e. secondary analysis of administrative data; qualitative research; stakeholder consultation; literature review) to answer the research objectives (see Table 1).

Table 1 – Overview research questions and study approach

Research question	Approach	Structure
• How is hospital care for geriatric patients currently organized and paid in Belgium (with a focus on inpatient geriatric consultation teams)?	Document review, expert consultation and analysis of administrative data	Chapter 2
• What are the strengths, weaknesses, opportunities and threats in the current organisation of and payment for Belgian inpatient geriatric consultation teams?	Qualitative study: focus groups with healthcare professionals	Chapter 3
• Which lessons regarding the organisation and payment of inpatient geriatric consultation teams can be learned from an analysis of international (best-) practices?	Quantitative scoping review, international survey of healthcare professionals and semi-structured interviews with healthcare professionals and researchers;	Chapter 4
• Which quality criteria can be defined to evaluate the quality of hospital care for geriatric patients (with a focus on inpatient geriatric consultation teams)?	Quantitative scoping review	Chapter 5

Key points

- **Healthcare systems are globally challenged by an ageing population and the coinciding increased burden of multiple chronic conditions.**
- **Frail older persons require a comprehensive geriatric assessment (CGA) approach including: case-finding; assessment of medical, psycho-social and functional factors; and formulation and implementation of a personalized treatment plan;**
- **Various organisational models exist to implement the CGA approach, of which acute geriatric care units are still considered the gold standard. Although 'inpatient geriatric consultation teams' have a high face-validity and allow to spread the 'geriatric culture' throughout the hospital there is, so far, no evidence to support its clinical effectiveness. In the co-management model geriatricians and the treating physicians (e.g. orthopedic surgeon) have shared responsibility for the process and outcomes of care through a shared decision making process. However, research evaluating the latter model is to date too preliminary to draw firm conclusions.**

2 FACTUAL DESCRIPTION OF THE ORGANISATION OF HOSPITAL CARE FOR GERIATRIC PATIENTS

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2.1 Introduction

The organisation of hospital care for geriatric patients (definition, see 1.2) in Belgium is regulated via **the care programme for geriatric patients** (Royal Decree published in 2007, updated in April 2014).[13] It is specified that:

- Each acute hospital with an acute geriatric unit should have a care programme for geriatric patients as specified by the Royal Decree[d];[13]
- Each acute hospital[e] without an acute geriatric unit should make a functional collaboration agreement with the nearest acute hospital with an accredited care programme for geriatric patients. The agreements for the ambulatory geriatric consult, the IGCT and external geriatric liaison are to be specified in a multidisciplinary manual.

The main aim of the care programme for geriatric patients is to pursue, via a multidisciplinary diagnosis, treatment and rehabilitation approach, an optimal level of functional performance and an as high as possible level of self-care and quality of life. It is specified that each hospitalised patient aged 75 years or older should be **screened** by a staff member of the unit on which the patient stays via a scientifically validated screening tool (younger patients are also eligble for screening based on clinical judgement). If patients are screened as being at risk, the inpatient geriatric consultation team should be consulted (or the reason for not consulting this team should be documented).

[d] Exception: geriatric hospitals. However, these hospitals specialized in geriatric care (with/without rehabilitation beds) should make a functional collaboration agreement with the nearest acute hospital with an accredited care program for geriatric patients.

[e] Exception: specialized hospitals with Sp-beds (rehabilitation) with or without general hospitalisation units (H-beds) or units for neuropsychiatric treatment of adult patients (T-beds) only

The Royal decree specifies several accreditation standards (e.g. composition and educational level of the inpatient geriatric consultation team, role and profile of the care programme coordinators, architectural norms) but the essence is that the care programme structures geriatric care in Belgian Hospitals around 5 components: 1) acute geriatric units (i.e. G-units); 2) geriatric ambulatory consultations; 3) geriatric day hospitals; 4) inpatient geriatric consultation teams at non G-units (referred to as 'internal liaison function') and; 5) external geriatric liaison function. We describe these 5 components in more detail below with a focus on the inpatient components (i.e. G-beds and inpatient geriatric consultation).

2.2 Acute geriatric units

In Belgium, the geriatric approach in hospitals was introduced in the sixties[26] with the creation of R beds (Geriatric and Rehabilitation) and V beds (long term care).[11] Since 1984, G beds (acute geriatric units) replace R and V beds.[11]

2.2.1 Aim and scope of acute geriatric units

Geriatric units should focus on geriatric patients (first admission or admission after being treated on an another unit first) with a polypathology that is disabling if not treated appropriately and may require an extended length of stay in the hospital. The acute geriatric units are characterised by an active, multidisciplinary (medical, nursing, allied health professionals) treatment of patients with the aim to restore the patient's fysical and psycho-social potential as soon as possible in order to enable hospital discharge. Patients are admitted on geriatric units during the acute episodes of their condition as well as during sub-acute episodes for which specialized input is required. However, acute geriatric units should not be used for long-term care of the older persons and the average length of stay in geriatric units should not exceed 45 days.[27]

2.2.2 Organisational characteristics of acute geriatric units

The medical chief of a geriatric department is a physician accredited in internal medicine with a special competency in geriatric care or a physician accredited as specialist in geriatric care[a] and has a full-time day job within the hospital. The acute geriatric unit has a dedicated nursing, allied health professional and care assistant staff that equals at least 14.13 full-time equivalents (FTE) per 24 beds.[27] This staff includes:

- A head nurse with a special professional title[b] in geriatric nursing (or those not meeting this requirement should follow the necessary additional education between November 1st 2014 and November 1st 2017to conform to this rule).
- Nine full-time equivalent nurses preferrably with a special professional title or competency[c] in geriatric care (with a 24/7 permancy of at least 1 qualified nurse);
- 1.33 full-time equivalent staff qualified as either occupational, speech, language therapist or psychologist.

In addition, the staff should be able to call in the support of physiotherapists and social workers.[27]

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a 'een geneesheer-specialist erkend in de inwendige geneeskunde met een bijzondere beroepsbekwaming in de geriatrie of een erkende geneesheer-specialist in de geriatrie'/' un médecin spécialiste agréé en médecine interne ayant une qualification professionnelle particulière en gériatrie ou un médecin spécialiste agrée en gériatrie'

b 'Bijzondere beroepstitel van verpleegkundige gespecialiseerd in de geriatrie'/' des infirmiers détenteurs du titre professionnel particulier d'infirmier spécialisé en gériatrie'

c 'Verpleegkundigen met een bijzondere beroepsbekwaamheid van verpleegkundige gespecialiseerd in de geriatrie'/' des infirmiers détenteurs de

2.2.3 Volume of G-beds in Belgium

Initially, G-beds were programmed according to a ratio of 5 G-beds per 1 000 inhabitants of 65 years and older.[11] This norm was increased to 6 G-beds per 1 000 inhabitants of 65 years and older in 2008[a]. However, in 2013, there were 11 755 programmed G-beds and only 7341 accredited G-beds. Figure 1 illustrates the gap between programmed and accredited G-beds over time; the change of norm explains the inflexion from 2007 to 2008. For Brussels the gap is small, while the number of accredited G-beds in Flanders and Wallonia is well below the programmed G-beds.

Programmed-accredited and justified beds

Programmed beds. Programming determines the number of hospitals, the number and type of departments and the number of beds. These numbers are based on the size, age structure, and morbidity of the population and on the geographical dispersion (Competency of the federal authorities).[28]

Accredited beds. A hospital not only has to fit into the national planning, it also needs to be accredited before it can operate. This is done based on accreditation standards and criteria that aim to offer a guarantee for hygiene, safety and quality of care (Since July 2014, due to the 6th State reform the federated entities have not only the competency to control for compliance with the accreditation standards. They now also have the responsibility to define accreditation standards. Yet, if necessary, the federal government has a veto right against new accreditation criteria when they have a negative impact on the budget of the federal government: see for more details Chapter 3 in Van de Voorde et al. 2014[28]).

Justified beds. The national closed-ended hospital budget is distributed among hospitals via the concept of 'justified beds' instead of on 'accredited beds' in an attempt to shift the hospital budget from a payment for structures towards a payment for activities. The number of justified beds is based on the number of 'justified days', calculated by multiplying the national average lengt-of-stay per pathology group with the case-mix of the hospital. As such the concept 'justified beds' does not refer to 'evidence based' activities. (Hospital payment is a competency of the federal authorities).[28]

la qualification professionnelle particulière d'infirmier ayant une expertise particulière en gériatrie'

[a] Arrêté royal du 9 mai 2008modifiant l'arrêté royal du 21 mars 1977 fixant les critères qui sont d'application pour la programmation des différents types de services hospitaliers. – Koninklijk besluit van 9 mai 2008 tot wijziging van het koninklijk besluit van 21 maart 1977 tot vaststelling van de criteria die van toepassing zijn voor de programmatie van verschillende soorten ziekenhuisdiensten.

Figure 1 – Comparison of programmed G-beds vs accredited G-beds (2007-2014)

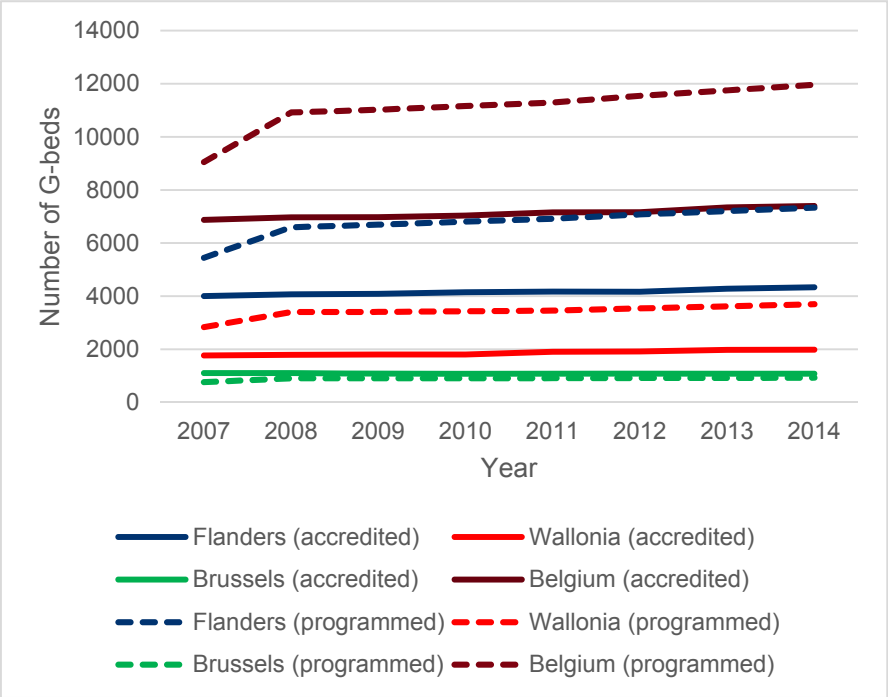


Table 2 compares the actual situation (accredited beds) in acute geriatric units in Belgium in 2007 and in 2014: Table 3 shows the spread of G-beds among acute hospitals: the number of G-beds per hospital is slightly higher and 525 extra G-beds have been created.

In 2011, 19.2% of hospitalised patients[a] aged ≥75 years had a stay on an acute G-unit (in 2008 this percentage was 17.3%). As such the vast majority (i.e. 80.8% in 2011) of hospitalised patients aged ≥75 years are admitted on non G-units.

[a] Source: linked database MZG/RHM and AZV/SHA by the TCT including all hospitalised patients (inpatient stays only, with exclusion of stays on N*, E, M, NIC, K, K1, K2 units)

Table 2 – Acute geriatric units in Belgian hospitals

	Number of acute hospitals		Number of acute hospitals with G-beds		Number of G-beds in acute hospitals		Number of isolated geriatric hospitals		Number of G-beds in isolated geriatric hospitals	
	2007	**2014**	**2007**	**2014**	**2007**	**2014**	**2007**	**2014**	**2007**	**2014**
Brussels	14	12	12	10	730	704	5	5	375	375
Flanders	61	55	59	54	3922	4253	2	1	82	82
Wallonia	38	37	32	35	1608	1828	1	1	159	159
Total	113	104	103	99	6260	6785	8	7	616	616

Source: FOD-SPF

Table 3 – G-beds in Belgian acute hospitals

Year	N	Minimum	25th Pctl	50th Pctl	75th Pctl	Maximum	Sum
2007	103	24	29	49	80	212	6260
2014	99	16	32	56	85	364	6785

Source: FOD-SPF

N – number of hospitals

2.2.4 Payment system

Hospitals receive their revenue from various sources with the hospital budget (the so called 'Budget of Financial Means' or BFM/BMF) and 'deductions on physician fees' as the two most important ones (each making up about 40% of the total hospital revenue). Other income sources are payments for pharmaceuticals, rehabilitation conventions, and supplements paid by patients. We explain below only the main principles and refer the interested reader for a detailed explanation towards KCE report 229.[28]

2.2.4.1 Fee-for-service system for physicians

Physicians are paid through the compulsory health insurance via a **fee-for-service** (FFS) system. The tariff per service is described in a very detailed 'nomenclature', and this tariff is supposed to cover the actual cognitive and physical 'labour' of the physician, but in many cases also part of the costs directly or indirectly linked to the provision of the service. Physicians cede part of their fees to the hospital to pay for (part of) the costs directly or indirectly linked to the provision of medical activities. These include costs of nursing, allied health professionals, technical, administrative, maintenance or other supportive staff but also the costs related to the use of facilities, costs of purchasing, renovation and maintenance of equipment and costs of

materials not included in the hospital budget. Deductions on physician fees are negotiated per (sub-)discipline and per hospital (with a resulting large variability in fee levels between medical disciplines and settings) and often are a source oftensions between hospital management and physicians. In general, 'technical interventions' are higher valued than 'intellectual activities'. Disciplines such as child psychiatrists and geriatricians 'suffer' the most from the low nomenclature tariffs for consultation time which contributes to the staff shortages in these disciplines. Yet, it should be noted that the so-called technical disciplines (e.g. radiologist, clinical biologist) also contribute most, via the deductions, to compensate for the underpayment of the hospital budget. As such, the differences between the disciplines are to a certain extent levelled out. However, differences remain high: factor 3 when comparing the averages per medical discipline which can amount up to factor 10 when comparing disciplines within hospitals.[28]

2.2.4.2 The hospital budget: a closed end macro-budget distributed across hospitals via a complex set of rules

The macro-level budget for hospitals (i.e. the BFM/BMF or the 'Budget of Financial Means') is a **closed-end budget** which is allocated to hospitals via a complex set of rules and calculation methods. The calculation of an important share of this hospital budget (the B2-part: covering clinical costs such as nursing staff on hospitalization units and medical products) is mainly based on pathology-weighted length of stay (LOS) calculations (the basic part). Additionaly, a supplementary part is calculated based on several parameters (e.g. nursing activity). Both the 'basic part' and the 'supplementary part' result in a number of 'points'. The national closed-end budget for B2 is distributed across individual hospitals by dividing the national hospital budget by the total number of B2-points 'earned' by all hospitals. This gives the monetary value of one B2-point (in 2013: € 24 824).[28]

The starting point for the calculation of the (basic) part of the B2-budget is the number of justified beds and the minimal nursing staff ratios (e.g. general surgery beds: 12 FTE per 30) that have been set in the past for various types of nursing units. Justified activities, the basic concept in the BFM/BMF, are based on the national average LOS per pathology group (see text box: All-patient refined diagnosis related groups), which is then applied to the case-mix of each hospital. Hence, the concept of justified activities is based on average activity and should not be confused with justified as reflecting evidence-based practice. Multiplying the national average LOS per pathology group with the case-mix of a hospital, gives the number of justified patient-days for the hospital. Per department or group of departments, the number of justified patient-days is divided by the 'normative occupancy rate' of the department (in general 80%) to result in a number of justified beds. For general surgical and internal medicine units this results in 0.4 FTE per justified bed or 1 point per bed or in other words 1 FTE nursing staff for general units is worth 2.5 points. It should be noted that this monetary BFM/BMF -value per FTE does not necessarily correspond to the actual staffing costs since the BFM/BMF -value depends on the size of the closed macro-level budget and the number of points to be distributed. In addition, these staffing ratios are an instrument to redistribute the closed-end budget across hospitals and should not be confused with mandated minimum safe staffing ratios as applied in other countries.[28]

For G-units only a basic part exist (i.e. no supplementary points) that equals 1.36 points per justified bed. This includes besides nursing staff (12 FTE per 24 beds) also occupational, speech and language therapists (1.33 FTE per 24 beds). The number of justified G-beds is calculated based on the pathology and justified LOS in G-beds with a normative occupancy rate of 90%. In contrast with the other unit types, justified G-beds can also be based on hospital stays outside of G-units (maximum of 6 justified G-beds[a] per hospital). The justified G-beds outside the G-units are based on a calculation of 'potential G-patients'. To qualify for this group the following conditions apply:

- At least 70 years;
- At least two affected systems/conditions;
- No billed days on G-units;

[a] 'Actual G-patients included'. This is a patient group that is these are calculated in a similar way as 'potential G-patients' but have billed days on a G-unit, but do not qualify as a GFIN

- A LOS higher than the half of the mean LOS in the similar GFIN-group.[29]

The allocation of days to G- versus C/D-units is proportional to the age of the patients (e.g. patients aged 70-74 years: 45% allocated to G-units and 55% to C/D-units; patients aged over 85 years: 90% allocated to G-units).[30, 31]

All-patient refined diagnosis related groups (APR-DRG) classification and Belgian sub-classifications

In Belgium the APR-DRG system (version 28 since 2014) is used as patient classification system in the hospital payment system. APR-DRGs extend the basic DRG structure by adding two sets of subclasses to each APR-DRG, i.e. severity of illness (SOI) and risk of mortality (ROM). Patients are allocated to an APR-DRG-SOI group on the basis of principal diagnosis, secondary diagnoses and procedures, age and sex of the patient and, for some APR-DRG (e.g. burns) type of discharge. There are four grades of SOI: 1 = minor; 2 = moderate; 3 = major; 4 = extreme. The DRG classification system in Belgium is based on the Minimal Clinical Data (MKG-RCM), which are part of the hospital discharge dataset (MZG-RHM) since the registration of 2008.

It should be noted, however, that for normal stays age is used as an extra variable, in addition to the DRGs and the severity of illness (SOI), to classify stays. For SOI-levels 1 and 2 a distinction is made between patients younger than 75 years of age, above 75 years of age and a separate group of geriatric patients, called GFIN. For SOI-levels 3 and 4 patients only the separate group of geriatric patients determines the age-specific classification group.

Hospital stays with the following criteria are classified as GFIN:

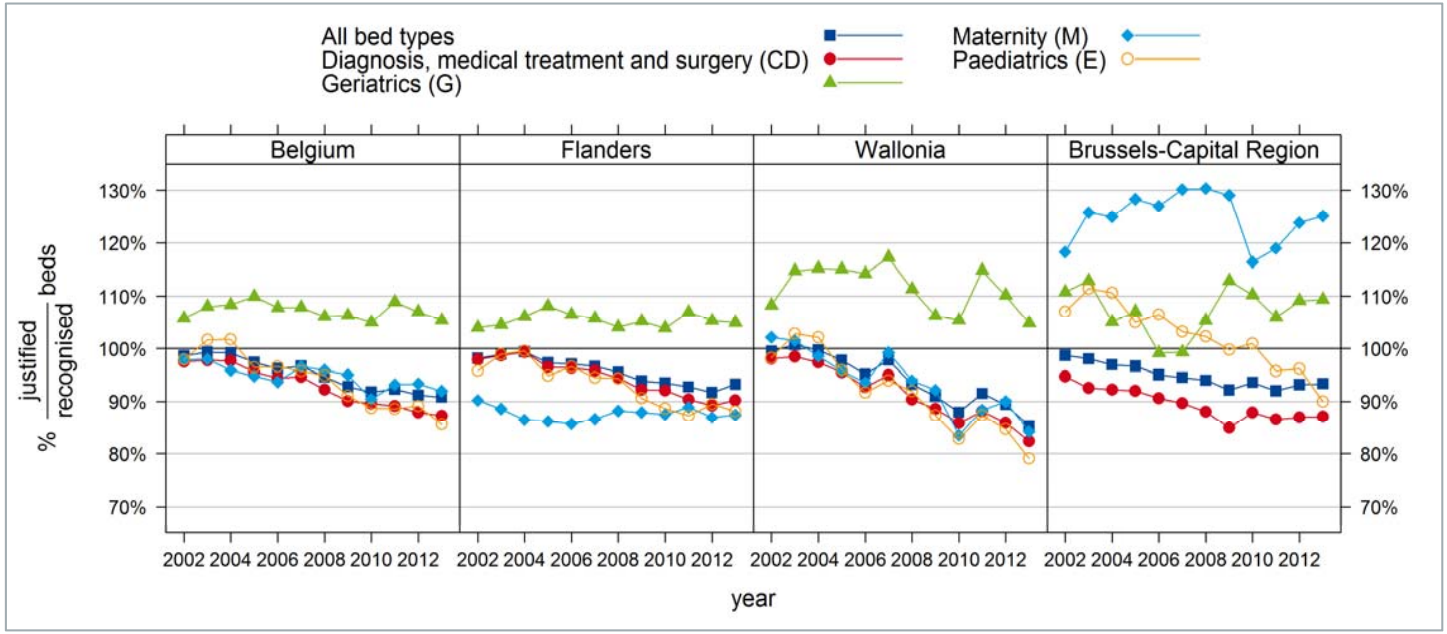
- 75 years or older;
- At least 10 hospitalisation days on a G-bed;
- LOS at least 30% longer than the average LOS of patients with a similar APR-DRG and SOI on non G-units.

If an individual patient is not aged ≥ 75 years, the average age of patients on G-units should be at least 75 years.

In addition to a normal stay, 9 other categories of stays exist, each with a specific definition of justified LOS and payment rule. Examples are short- and long-stay outliers, APR-DRGs with less than 30 stays etc. We refer to Sermeus (2006) for a more detailed description.[30, 31]

It should be noted from Figure 2 that the number of 'justified G-beds' is higher than the number of 'accredited or recognised G-beds' which could indicate capacity problems on these hospital units. This is in contrast with the other unit types where there are in general more accredited than justified beds potentially indicating an over-capacity of these bed types.[31] Hence, in future reforms it is important to take into account needs assessments for the different unit types when planning the hospital capacity. After all, a linear reduction in the hospital capcity could result in a worsening of the already exiting shortage in the capacity in geriatric beds.

Figure 2 – Comparison of the number of justified and accredited beds for Belgium and the three regions per bed type, 2002-2013



Source: FOD-SPF[31]

2.3 Geriatric ambulatory consultation

Geriatric **ambulatory consultations**. These monodisciplinary consultations are run by geriatricians and target patients preferrably referred by a general practitioner (GP). The aim of the consultation is the formulation of a geriatric advice or the delivery of an intervention that does not require a multidisciplinary approach. Physicians charge a fee for their consultation based on the fee-catalogue (the so-called nomenclature).[13]

2.4 Geriatric day hospitals

Geriatric day hospitals. The purpose of an admission in a geriatric day hospital is to organise the geriatric evaluation and management in a multidisciplinary way. Patients are admited on request of a GP, specialised physician or after an above-mentionned geriatric consultation. After several years of pilot-testing, the payment for geriatric day hospitals is structurally embedded in the hospital budget since 1 July 2014.[32] Each hospital with an accredited acute geriatric unit receives a yearly lump sum to organize this activity within the contact of the geriatric unit. The size of the lump sum depends on the activity of the geriatric day hospital (e.g. treshholds based on the number of geriatric patients admitted).[13]

2.5 Geriatric consultation teams

Geriatric consultation teams have, according to Belgian law, two main functions: inpatient geriatric consultation and external geriatric liaison.[13]

2.5.1 Inpatient geriatric consultation.

Geriatric expertise throughout the hospital

The main aim of inpatient geriatric consultation teams is to share the core geriatric principles and multidisciplinary expertise to all medical staff and care teams and for all hospitalized persons (including day hospitalisations) with a geriatric profile who are admitted in non G-units.

Multidisciplinary team

An inpatient geriatric consultation team encompasses a multidisciplinary team including geriatricians, nurses specialised in geriatric care, a physiotherapist, occupational, speech and language therapist and a psychologist. At least 2 FTE[b] are foreseen for this multidisciplinary team but the precise size of the staff is calculated based on the annual number of patients aged of 75 years who are admitted in non G-units. To facilitate the implementation of IGCTs the concept of geriatric resource nurses[c] was, initially, introduced in all non-geriatric units (with exception of paediatric, neuropsychiatric and maternity units). Yet, this criterion was abandonned in the latest update of the Royal Decree in 2014.

Advisory and dissemination role

The roles of the IGCT include the following:

- Evaluation of the geriatric profile of patients that were flagged as being 'at risk' by a screening performed with the aid of a scientifically validated instrument by staff members of non-geriatric units;
- A multidisciplinary geriatric assessment of the patient with a geriatric profile;
- Formulation of recommendations to the care team and the treating physician of the non G-unit during the hospitalisation period. These recommendations are documented in the patient records;
- Formulation of recommendations to the GP with the aim to prevent hospital readmissions. These recommendations are documented in the patient records;
- Dissemination of the geriatric approach throughout the hospital, by among others teaching nurses how to systematically screen patients with a geriatric profile and by the organisation of training and continuous education for nurses and allied health professionals.

The inpatient geriatric consultation team does not provide direct patient care. The team has to meet at least once a week to discuss the inpatient geriatric consultation team's interventions during a team meeting. All observations are recorded in the patient records and are communicated to the treating care team at the non G-unit.

From funding pilot projects towards a structurally embedded funding

The IGCT concept of was introduced in Belgium via pilot-projects and temporary funding (via B4 of the BFM-BMF) in 2007. In 2013 (last year with pilot funding) funding of IGCTs corresponded to a budget of € 16 884 208 for 92 hospitals. Each hospital received the same budget of about € 184 000 to finance a team of four FTEs (nurse, occupational therapist, speech therapist, dietician, and psychologist) that is supported and supervised by a geriatrician.[33]

Since 1 January 2014, this project funding is structurally embedded in the BFM/BMF in the sub-parts B4- and B9. Each acute hospital with an accredited geriatric department (in addition to general surgery and internal medicine departments) is funded to develop and implement an IGCT. The budget guarantees a minimum of 2 FTEs (1 FTE equals € 58 000) but is limited to a maximum of 6 FTEs. The number of FTEs financed depends on the number of inpatient stays of patients of 75 years or older in non G-units.[34] This results in budget shifts between hospitals from 2014 onwards.[33]

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b Geriatrician not included

c Geriatric resource nurses (referentieverpleegkundigen voor de geriatrische zorg /infirmier relais pour les soins gériatriques) need to be trained and have special experience in the care for older persons, and work in collaboration with the IGCT[1].

Specific fees for geriatricians

There are also two specific reimbursement codes for geriatricians, only applicable to patients aged ≥75 years:[33]

- Code 599045 for a consultation on a non G-unit, with a maximum of two consultations per hospital stay. The consultation should berequested by a medical specialist from a non G-unit. The consultation should be documented in the patient records, including a detailed treatment plan;
- Code 597623 for participation in multidisciplinary team meetings for patients treated on non G-units for whom nomenclature code '599045' was billed at least once. There is a maximum of two team meeting per week during the same hospital stay. On the team meeting should be present: the geriatrician of the IGCT, a nurse and at least one other discipline (physiotherpist, dietician, psychologist, social worker, speech & language therapist of the non-G unit). The conclusions should be documented in the patient records.

Table 4 – Patients aged ≥75 years on non G-units with and without a billed geriatric consultation

Patients ≥75 years on non-geriatric units	2008	2009	2010	2011
With* consultation of the IGCT geriatrician	12 435 (3.7%)	16 365 (4.8%)	18 164 (5.3%)	20 660 (6.0%)
Without consultation of the IGCT geriatrician	325 667 (96.3%)	324 002 (95.2%)	325 428 (94.7%)	321 750 (94.0%)
Total	338 102	340 367	343 592	342 410

**nomenclature code 599045 and/or 597623 are billed*

Table 3 shows the proportion of stays for patients aged ≥75 years treated in non-G units with and without a consultation by an IGCT geriatrician. Although consultation rates are low, they aregrowing steadily. There are also remarkable variations between hospitals: in 2011, one hospital out of four didn't bill any code 599045 consultation for this patient population while on the other side of the spectrum 25% of the hospitals billed in 7.5% to 92.1% of these hospital stays a geriatric consultation nomenclature code (see Table 4 and Figure 3). Likewise, the number of 'multidisciplinary team meetings' that is billed in the context of an IGCT by geriatricians is highly variable across hospitals (0-16% of patients aged ≥75 years admitted on non G-units) (see Figure 4).

Table 5 – Proportion of stays for patients aged ≥75 years treated in non G-units with a billed geriatric consultation: hospitals variations

N	Minimum	25th Pctl	50th Pctl	75th Pctl	Maximum	Mean
126	0.0%	0.0%	1.7%	7.5%	92.1%	5.9%

Figure 3 – Proportion of stays (patients aged ≥ 75 years) with a billed geriatric (IGCT) consultation (2011)

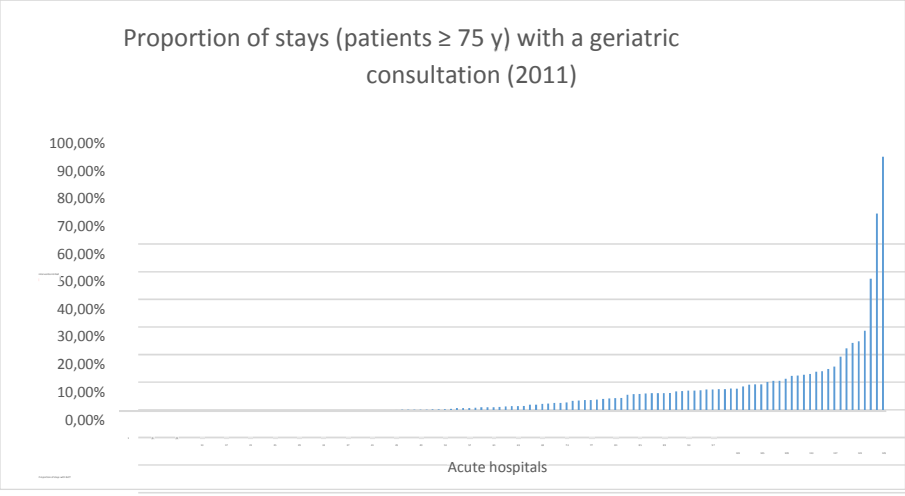
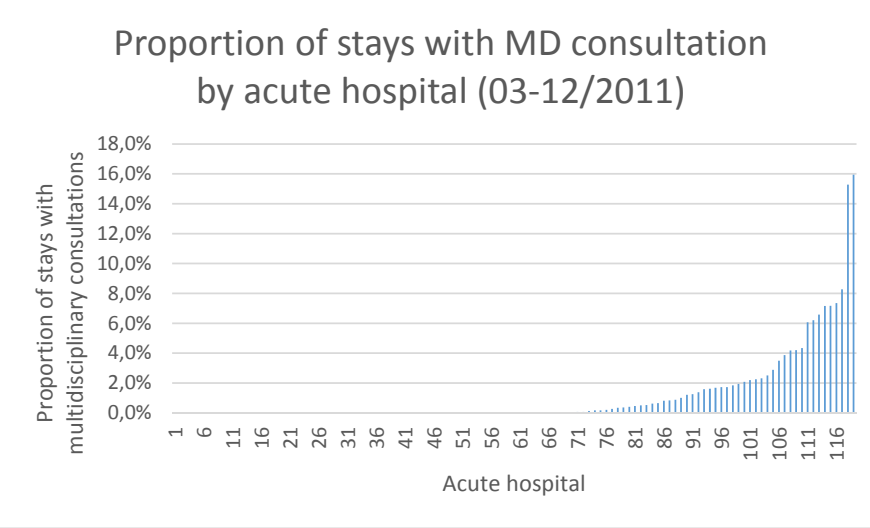


Figure 4 – Proportion of stays (patients aged ≥ 75 years) with a billed multidisciplinary geriatric team meeting (2011)



Source: TCT

Implementation of IGCT in Belgian Hospitals

The implementation of IGCT in Belgian hospitals was initially, during the first batch of pilot-projects in 2007, supported by a consortium of academic teams funded by the FOD/DPF. Via a bottom-up approach *a task and function description for IGCT* was developed. This document served as a useful starting point for other hospitals that stepped into the pilot-projects. The approach included an intensive process with information exchange about and reflections on daily practice (organised per geographic region). This resulted in the emergence of a broad consensus about the task description and function of IGCT and, thus, a wide support from the field.[35] This interactive knowledge sharing approach was much appreciated by the participating hospitals. During this initial implementation phase, the consortium also studied several aspects of the IGCT such as:

- The predictive ability of screening tools to identify patients eligible for IGCT intervention (e.g. all instruments result in a high number of false positive cases but GRP, TRST and VIP were found to have a better predictive ability concerning functional decline than the ISAR);[36]
- The patient population targeted by the IGCT during the first pilot year (patients with a mean age of 82 years, frequent psychosocial problems, disturbed homeostasis and increased vulnerability, high risk of functional decline.[35]

Despite the large appreciation and learning effect, this structured and systematic information exchange was abandoned. Yet, some follow-up research was funded. In 2010, 61 Belgian hospitals with IGCT completed a survey that aimed to evaluate the implementation and performance of IGCT.[37] Since two hospitals completed two questionnaires (IGCT on different hospital sites) a total of 63 questionnaires was used for the analysis. The first teams started in 2003 (n=1), 2004 (n=1) and 2006 (n=2). Most team started in 2007 (n=30) and 2008 (n=20). Only 9 teams started in 2009, one year before the survey. All teams had a five-day working week. We summarize the main results:

- Composition of teams: on average 4.3 FTE ranging from 1.9 – 10.1 FTE. As such, some hospitals funded the IGCT by other means than the funds provided for the pilot projects (i.e. restricted to 4 FTE per hospitalSurprisingly the variation in team size was not correlated to the size of the hospital or the number of geriatric patients. Nurses and occupational therapists were core members in more than 90% of the teams with nurses having the most impact in the team. The geriatrician, dietician, psychologist and speech & language therapist were additional core members in more than half of the teams. Social workers, physiotherapists and psychiatrists were more likely to be available on call.[37] The vast majority of teams (n=61) organized multidisciplinary team meetings on a regular basis (mostly once a week). Although most teams reported the presence of 'geriatric resource nurses' on non G-units, most participating IGCT rated the function of geriatric resource nurses as 'poor' or 'bad'. [37]
- Detection of high-risk patients: Twenty-seven teams estimated that more than 75% of the patients aged ≥75 years admitted to their hospital were screened for having a geriatric profile. In four hospitals a minimal screening was observed (<25% of the patients), with the following explanations given: insufficient nursing staff to perform the screening (n=3), screening is too time consuming (n=1), the IGCT does not intervene on all geriatric units (n=1).[37] The screening was mostly performed using the Triage Risk Screening Tool (n=23) or the Identification of Seniors At Risk (n=20) but several hospitals reported to use higher thresholds than those recommended in the scientific literature (e.g. only one team used the recommended threshold of ≥2 of the ISAR while 21 teams used a threshold of ≥3). As such, teams likely try to reduce the number of false-positive cases (and the workload that they generate) at the expense of sensitivity (i.e. risk that more true positive cases are missed). In 45 teams, a positive screening automaticaly resulted in a request for the IGCT. Response time of these consultation teams was 1.5 days on average.[37]
- Assessment of high-risk patients was mainly done on general hospitalisation units (n=56). Only a minority of the teams intervened on the emergency care department (n=7) or the day hospital (n=4).[37]
- Recommendations for high-risk patients and adherence: All IGCT reported that the recommendations were not mandatory for the staff of the requesting non G-units. They communicated their recommendations orally to caregivers of the unit (n=52), on paper (n=52) or in the electronic patient record (n=41). Only eight teams estimated that more than 90% of their recommendations were adhered to. Twenty-four and twenty-three teams reported an adherence rate between 50 and 90%, and between 10 and 50%, respectively. Four teams stated that less than 10% of the recommendations were adhered to. The communication of recommendations to the primary care level was reported by 43 teams.
- Workload: The median workload per team per year was estimated on 591 consults (Q1=251; Q3=804) and 423 patients for whom recommendations were provided (Q1=230; Q3=633).

In addition, several strengths and weaknesses about IGCT in Belgian hospitals were discussed in reports, advices and studies published at different stages during the implementation process. Recurrent weaknesses reported include the shortage of geriatricians;[33, 38] lack of nursing staff with geriatric expertise; no systematic screening of patients aged ≥75 years or

screening performed by IGCT;[33] insufficient commitment of emergency departments;[33, 38] non-adherence to the recommendations made by IGCT[33, 39] and lack of follow-up of recommendations by IGCT[39] Also, demands exceeding the capacity[33, 38, 39] (especially when there are insufficient G-beds)[33] ,hospitals not using the dedicated financial resources for their IGCT,[33, 38] the failing role of geriatric resource nurses due to a lack of time and expertise allocated to these functions were stated.[33, 38] Also several strengths such as the 'holistic and multidisciplinary approach'[39] and spreading of geriatric culture[39] were repeated in different publications.

Profile of patients seen by the inpatient geriatric consultation teams

The LOS varies between types of stay, especially non G-units where the stays with a IGCT intervention (GL) (nomenclature code 599045) are longer than the stays without (Table 6); the population targeted by the IGCT thus seems valid. Also a description of the top 10 most frequent APR-DRGs (All Patient Refined Diagnosis related Groups) for patients aged ≥75 years clarifies that the profiles of patients on acute geriatric units and patients with and without a geriatric consultation by a geriatrician differ.

Table 6 – Length of stay by type of stay for patients aged ≥75 years

Label	Number of stays	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Geriatric consultation IGCT geriatrician	67 625	25.63	28.36	9	16	32
No geriatric consultation IGCT geriatrician	1 296 854	11.57	18.38	2	6	13
Acute geriatric nursing unit	304 136	20.68	21.53	9	15	25

Table 7 – Top procedures APR-DRG by type of stay

Type of stay		Geriatric consultation		No geriatric consultation		G-unit	
	APR-DRG	#	%	#	%	#	%
Hip & femur procedures except major joint for trauma	308	1	8.1%	4	1.7%	5	0.3%
Major joint & limb reattach procedures of lower extremity for trauma	301	2	5.3%	9	1.1%	8	0.2%
Major joint & limb reattach procedures of lower extremity except for trauma	302	3	4.7%	1	3.6%	9	0.1%
Shoulder, elbow & forearm procedures	315	4	2.0%	6	1.5%	12	0.1%
Major small & large bowel procedures	221	5	1.9%	8	1.3%	3	0.3%
Extensive procedure unrelated to principal diagnosis	950	6	1.3%	15	0.6%	1	0.7%
Other vascular procedures	173	7	1.3%	2	2.0%	7	0.2%
Knee & lower leg procedures except foot	313	8	0.9%	17	0.5%	23	0.1%
Perm cardiac pacemaker implant without ami, heart failure or shock	171	9	0.8%	7	1.4%	4	0.3%

Type of stay		Geriatric consultation		No geriatric consultation		G-unit	
	APR-DRG	#	%	#	%	#	%
Back & neck procedures except dorsal & lumbar fusion	310	10	0.6%	14	0.7%	22	0.1%
Urethral & transurethral procedures	446	11	0.6%	5	1.5%	13	0.1%
Major joint & limb reattachment procedures of upper extremity	306	12	0.6%	26	0.3%	56	0.0%
Percutaneous cardiovascular procedures wthout ami	175	13	0.5%	3	1.7%	40	0.0%
Nonextensive procedure unrelated to principal diagnosis	952	14	0.5%	30	0.3%	2	0.5%

Table 8 – Top medical APR-DRG by type of stay

Type of stay		Geriatric consultation		No geriatric consultation		G-unit	
APR-DRG	APR-DRG	#	%	#	%	#	%
Heart failure	194	1	4.5%	1	3.4%	4	4.0%
Simple pneumonia	139	2	2.7%	2	2.5%	3	5.5%
Cva with infarct	45	3	2.6%	7	2.1%	11	2.3%
Rehabilitation / 23 - m	860	4	2.2%	5	2.4%	2	5.8%
Chronic obstructive pulmonary disease	140	5	2.2%	3	2.5%	9	2.6%
Degenerative nervous system disorders	42	6	2.0%	12	1.3%	1	6.0%
Cardiac arrhythmia & conduction disorders	201	7	1.7%	4	2.4%	20	1.4%
Medical back problems	347	8	1.5%	14	1.2%	8	2.7%
Fracture of pelvis or dislocation of hip	341	9	1.4%	44	0.5%	29	1.0%
Kidney & urinary tract infections	463	10	1.3%	17	1.0%	7	2.7%
Fracture or dislocation except femur & pelvis	342	11	1.3%	30	0.7%	30	1.0%
Other digestive system diagnoses	250	12	1.3%	6	2.1%	10	2.3%
Respiratory system signs, symptoms & other diagnoses	144	13	1.1%	9	1.5%	5	3.1%

Effectiveness of geriatric consultation teams

As described in Chapter 1, there is to date *no evidence for the clinical effectiveness* of inpatient geriatric consultation teams on functional status, readmission, LOS and in-hospital mortality. The last published meta-analysis[22] also included a Belgian single-site study where the effectiveness of the IGCT intervention on one trauma unit was compared with conventional care on another trauma unit for older adults with hip fracture (Intervention group: n=94; Control group: n=77). The study did not generate consistence evidence about effectiveness of IGCT on LOS, mortality, readmission rates and new nursing home admissions. Several explanations for this null findings were given such as: learning effect present on the control unit (different nursing staff but same hospital), high geriatric expertise already present on the intervention and control units (i.e. tertiary care hospital with high volume of hip fracture patients), lack of adherence to IGCT recommendations (e.g. only 187 of the 329 or 57% of all IGCT recommendations) were entirely followed by the care team of the non G unit (trauma unit).[40] In a follow-up publication of the same trial the effect on delirium was evaluated.[41] Although the proportion of patient with postoperative delirium was in general higher in the control than in the intervention group, this effect disappeared when controlling for base-line differences in ADL-status (activities of daily living). In addition, no difference was seen in the duration or severity of delirium episodes.[41]

2.5.2 External geriatric liaison

External geriatric liaison. The external geriatric liaison function aims to make the geriatric principles and expertise available to GPs and primary care givers. The purpose is to optimalise the continuity of care, to avoid inappropriate admissions, to create synergy and develop networking between care givers in the out- and inpatient setting. The external liaison has to be applied/conducted in a transversal way by the teams of G-units, geriatric day hospitals, IGCT and geriatric consultation spanning the entire hospitalsation episode from admission to discharge.[13]

Each hospital with a geriatric care programme for geriatric patients has to form collaboration agreements with:

- Home care services;
- GP-organisations ('huisartsenkringen'/' Cercles de médecins généralistes');
- Nursing homes;
- Day care centres.

In addition, arrangments with the social services (and if relevant with the treating team in charge) of the hospitals should be made to prepare the discharge of the geriatric patients in the best possible way.

2.6 Geriatricians and nurses

The workforce for geriatric patients is characterised by its multidisciplinary nature. In this section we describe only the 'geriatricians' and 'nurses with a special title or competency in geriatric care'.

Geriatricians: supply does not need the demand

Since 1986 medical specialists in internal medicine can work as a geriatrician via a 'special competency in geriatric care'. Since 2005, physicians can also obtain the title of specialist in geriatric care.[42] In 2013, 170 physicans with a special competency in geriatric care and 278 specialists in geriatric care were recognised. However, this does not imply that 448 geriatricians are active as some of them are retired, active abroad or (partially) active in other medical disciplines (e.g. endocrinology, internal medicine).[43] In addition, the two categories are not mutually exclusive. If we use the RIZIV/INAMI figures from 2013, 284[d] geriatricians (trainees excluded) could bill prestations via the nomenclature. However only 278 of them billed at least one prestation for patients admitted in a hospital. Moreover, only 210 geriatricians billed IGCT activities

[d] RIZIV/INAMI-codes 180 & 184: 'Geneesheer specialist voor geriatrie'/'Médecin spécialiste en gériatrie' &' Geneesheer specialist voor geriatrie en F.P'/' Médecin spécialiste en gériatrie et F et P'

The Federal platform for the geriatric care programme calculated several scenarios to predict the required number of graduating geriatricians per year. An expert panel estimated that at least 1.5 FTE geriatrician per 24 accredited G-beds would be required.[e] Based on this minimal scenario, it was calculated that there wasa shortage of 143 FTE geriatricians in 2010,. This would require at least 30 graduating geriatricians per year to solve this shortage in a time span of 5 years.[38] The commission responsible for the planning of the medical workforce recommended a yearly minimal quota of 20 geriatricians between 2010-2018 and to abandon the maximal quota of graduating geriatricians from 2020 onwards. However, they also noted that this pace could not be realised with the available training places.[44] Between 2010 and 2013 only 28 physicians started with a training in geriatric care resulting in a difference of 52 geriatricians compared to the planned minimal number (i.e. 80 places planned during these four years while only 28 started). It should be noted that in Flanders, only 3 physicians started with a training in geriatric care in this period.[45] This shortage of geriatricians,which was already clearly felt by the hospitals in 2011 (i.e. vacancies for geriatric posts remained open for long periods), is expected to worsen in the near future.[46]

Nurses with special expertise in geriatric care

Since 2007, nurses with a special expertise in geriatric care (special education and experience, working in the geriatric field such as G-units) can receive a special title[f] or competency in geriatric care which results in a yearly bonus.[47] In 2013, 1 960 nurses had a special title and 3 020 nurses had a special competency in geriatric care. It is, however, unclear how many of these nurses at which employment rate work in the geriatric care programmes of acute hospitals (e.g. since 2012 the recognition is enlarged from hospital nurses towards nurses working in nursing homes).[43] Yet, the Belgian Nursing Minimum Dataset holds the best available estimate: on the 1st of December 2010 there was an equivalent of 321 FTEs and 139 FTEs nurses with a special title and special competency in geriatric care employed in Belgian hospitals[48], respectively (in 2010, the recognised number of nurses with a special title and competency in geriatric care was 668 and 628, respectively).[49]

Importantly, the vast majority of nurses working in G-units or within the geriatric care programme do not hold a special title or competency in geriatric care. After all, on 1st of December 2010 a total equivalent of 3002 nurses was registered on geriatric units which is far more than the 1296 nurses with a special title or competency in geriatric care working in the hospital (not only G-units). In addition, an audit of Flemish nursing education programmes regarding 'geriatric care' showed large heterogeneity between nursing schools in terms of dedicated hours in the curriculum, clinical placements and available expertise.[50]

[e] This is not an official norm. In the care program for geriatric patients there is no norm for the number of geriatricians per 24 beds.

[f] Bachelor-prepared nurses

Key points

- **Since 2007, the care programme for geriatric patients regulates the care organization for geriatric patients in Belgian hospitals. For inpatients there is a focus on acute geriatric units and IGCT (called 'inpatient geriatric liaison'). Despite the absence of evidence about the effectiveness of IGCT, the Belgian legislator is very prescriptive about the composition, role and scope of practice of these teams. Since 2014 the pilot funding was transformed in structural funding integrated in the hospital payment system.**
- **The actual number of beds in acute geriatric units (i.e. G-beds) is lower than programmed. In addition, the discrepancy between 'justified G-beds (i.e. beds for which the hospitals receive budget)' and 'accredited G-beds' may indicate capacity problems on acute geriatric units'.**
- **Since 2007, hospitals have experimented on a large scale with IGCTs. The implementation, supported by a consortium of academic teams, was mainly driven bottom-up resulting in heterogeneity in composition and functioning of teams.**
- **A controlled trial in a Belgian tertiary care setting could not illustrate the clinical effectiveness of inpatient geriatric consultation teams compared to conventional care. However, this single-hospital study had several limitations (e.g. high base-line expertise, potential contamination intervention and control group).**
- **There is a shortage of geriatricians and nurses with geriatric expertise hindering both the expansion of acute geriatric units as well as IGCTs.**

3 SWOT-ANALYSIS OF BELGIAN INPATIENT GERIATRIC CONSULTATION TEAMS

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[a] Yellow Window

In this chapter we report about a SWOT-analysis of the current Belgian geriatric consultation teams with a focus on their inpatient function. 'interne liaison'/'liaison interne'). Nevertheless, also aspects about the 'external liaison' function were discussed and analysed.

3.1 Methodology

The SWOT technique is an analytical method, which has the advantage to be easy to use in participative approaches. In general, it helps to understand how an organization can achieve strategic goals.[51] In this project, it was used to explore in-depth, and in a participative way, the internal and external factors that affect the quality of services provided and the impact that can be achieved by Belgian IGCT.

In practice, the SWOT analysis performed for this study was implemented in different steps, alternating data collection and analysis: results of the literature review (chapters 4 and 5) informed a case analysis, which in turn served as the basis for a first wave of focus groups. At that point, a 'consolidated SWOT' had been put together, which was discussed, complemented and validated in a second wave of focus groups. In the groups, input was collected from the participants on sticky notes, all discussions were audio-recorded and extensive field notes were taken by a researcher.

3.1.1 Step 1: Preparation

First drafts of the literature review (chapters 4 and 5) were analysed to identify the relevant information which can be linked to quality criteria for IGCT. The team also reviewed the content of the questionnaire used for the international survey (see chapter 4).

3.1.2 Step 2: Case analysis of experiences

The objective of this case analysis was to collect opinions and insights from persons directly involved in the implementation of IGCT before developing the interview guide for the focus group discussions. More specifically, these interviews were aimed at gaining an understanding of the results of the study realized in 2010 among 63 hospitals[37] and more specifically about enhancing and inhibiting factors for adherence / use of the IGCT team and factors affecting the impacts. The questionnaire used for the international survey (see chapter 4) served as the basis for the interview guide, focusing on the qualitative questions.

Two hospitals were visited for one day each at the end of June 2014, during which various interviews took place with persons with different profiles (see below). Both hospitals are medium to large-sized regional hospitals: one in the Walloon part of the country, the other in the Flemish part.

Description of the terminology 'clients of IGCT'

IGCT have an advisory role for patients admitted on non G- units. In this chapter we use the concept of "client" of the IGCT to describe the healthcare professionals of the hospital units who can ask for the assistance of the IGCT for their patients. They are the ones who take the initiative (not) to invite the IGCT team.

Persons interviewed:

- Geriatrician in charge of IGCT in both hospitals;
- Head nurse of the IGCT in both hospitals;
- "Clients" of the IGCT: five different persons (two medical doctors, three head nurses);
- Additional team members of IGCT: 3 staff members including a psychologist and two nurses;
- Middle management: one person in charge of the care programme for geriatric patients, one discharge manager.

Results of the interviews were used to plan and organize the focus groups and to prepare the interview guide. Themes were identified to be addressed in the groups, in addition to the SWOT itself. Eventually, eight themes were selected (see guide for focus groups in appendix 1).

3.1.3 Step 3: First wave of focus groups

Four focus groups with duration of 2.5 hours each were organized::

- Two in French: one in Brussels at the KCE, one in the Walloon region in Charleroi;
- Two in Dutch: one in Brussels at the KCE and one in the Flemish region, in Antwerp.

Participants were recruited through a 'call for participation' sent to the 91 hospitals who had participated in the pilot programme for IGCT. Hospitals were asked to propose participants with different profiles (e.g. geriatricians, different profiles of members of IGCT teams, "clients" of the IGCT and hospital management). The response to this call was high 60 responded within the deadline for recruitment. Participants were selected from lists provided by 20 hospitals from the French-speaking part of the country and 36 hospitals from the Dutch-speaking part of the country. For 4 hospitals no participants were recruited.

Purposive sampling of participants was applied, taking into account the following criteria:

- Mix of functions: geriatricians, different profiles of members of IGCT teams, 'clients' of the IGCT and hospital management;
- Balance between small, medium and large (university) hospitals;
- Gender balance.

Maximum one participant per hospital was selected. The number of planned participants was increased from 8 to 10 to allow more hospitals to take part in the process of the SWOT analysis (responding to the demand for participation), ensuring a balance between functions, and to have a small reserve in case participants would cancel or not show up.

Only one participant was absent in one group; all others who could not attend after having confirmed, could be replaced on time by similar profiles (see Table 9). The interview guide for the focus groups is included in appendix 1.

Table 9 – Participants focus groups

Profile	First wave – Dutch	First wave – French	Second wave – Dutch	Second wave – French
Geriatrician	4	4	0	1
Nurses who are member of the ICGT team	7	10	4	3
Other members of the ICGT team	2	1	1	0
Clients of the ICGT team	2	3	0	0
Hospital management	3	4	2	2
Total	**18**	**22**	**7**	**6**

3.1.4 Step 4: Second wave of focus groups

In a second wave two focus groups of 2 hours each were organized to work on the basis of a consolidated SWOT resulting from the first four groups, and to perform an additional analysis of conversion and matching. This additional analysis consisted of linking the different elements of the SWOT: a first exercise to convert weaknesses and threats into strengths and/or opportunities; and a second exercise of matching strengths and opportunities in order to enhance the impact.

Both focus groups, one in Dutch and one in French, took place at the KCE in Brussels.

Participants were purposively selected as follows:

- For the French-speaking groups: participants of the first wave;
- For the Dutch-speaking group: a combination of participants from the first wave, and participants from hospitals that were not selected in the first wave.

The mix of participants was slightly different from the first wave as there were no 'clients', there was only one geriatrician per group and there was a dominance of (middle) management, either directly of the IGCT, or at a higher level.

The context of these groups was more difficult as the date for the groups (which both took place in the premises of the KCE) had to be postponed due to a national demonstration in Brussels on the originally planned day. The result was a constant change of participants. Eventually, the groups counted 6 and 7 participants respectively, instead of 8 (as was foreseen). The interview guide is included in appendix 1.

3.1.5 Reflections on the approach

The approach used has been proven successful, as can be inferred from the high response rate and interest in participation, and the quality of participation and input, during both waves. The second wave still brought significant added value through validation, prioritization and interpretation.

However, participants in the groups, including the clients, were all 'believers' of the IGCT. This might be because only hospital units relying on IGCT activities were invited to participate. The opinions of those units not using the IGCT, and who might be more critical towards IGCT, have therefore not been evaluated (or only indirectly). Also, alternative inpatient geriatric care models were not discussed. While these methodological choices might have biased the results towards the strengths of IGCT, there are indications that this effect should not be overestimated. Indeed, the results show a good balance between strengths and weaknesses and participants across all groups proved able to take a critical stance towards IGCT.

3.2 SWOT: Analysis of results

Disclaimer. The following results are based on statements of participants, not verified facts.

This section presents each of the components of the consolidated and validated SWOT analysis, as constructed through the two waves of focus group discussions.

Table 10 – Overview of strengths-weaknesses-opportunities-threats

Strengths	Weaknesses
• Impact on the patients, their family and informal caregivers • Spreading a geriatric 'culture' and expertise • Specificity of the approach: a multi-disciplinary and holistic approach of the patient • Impact of IGCT on the process and quality of care (the total caregiving) in the hospital • Impact of IGCT on discharge and readmission • Structure and functioning of the IGCT • The close cooperation between IGCT and the social service of the hospital	• Shortage of geriatricians • Purely advisory role of the IGCT • resistance to IGCT of medical care providers (physicians) • Shortage of resources: staff, time and financing • Quality of screening procedure • Lack of geriatric training of medical and nursing staff • Quality and content of the discharge letter and the impact extra-muros • Mobilization of allied health professionals • Little openness to IGCT of some units
Opportunities	**Threats**
• Transfer of knowledge and awareness-raising • Cooperation with GP and care services at home / trans-mural care (emphasis on two-way communication and 'dialogue') • Digitalization • Increasing number of patients aged 75+ • Improved orientation of patients inside the hospital • Stability / sustainability of IGCT • Demonstrating the importance of IGCT • Embedding the IGCT within the hospital	• Shortage of personnel with a specific expertise in geriatric care • Evolution of the payment system • Lack of support and recognition: by other units and by hospital management • Risk of demotivation • Increasing number of patients aged 75+

3.2.1 Strengths

The SWOT analysis reveals *seven key strengths* of the IGCT, as it exists today. Already in the first wave, a clear convergence and broad consensus appeared among the participants as to the first six strengths set out below. Each of these points was spontaneously mentioned in three or four of the group discussions. The seventh point has been added in the second wave of discussions.

1. Impact on the patients, their family and informal caregivers

The participants emphasize the importance of a comprehensive approach and 'involvement' with the patient. Rather than focusing on a single condition or pathology care planning is oriented towards comprehensive goals that have been defined in collaboration with the patient and family members. The following points are underlined in relation to this interpersonal contact:

- This means an important support for the patients and their family;

"The physician is interested in the pathology, while the interest of internal geriatric liaison is in the person, the family, the life plan and the prognosis."

- The interpersonal contact during patients' stay in the hospital enhances patients' satisfaction;
- A very important dimension of the work of IGCT is the 'humanisation' of the care that is provided.

During the second wave, this impact has been extended to the informal caregivers.

2. Spreading a geriatric 'culture' and expertise

A second strength that came up spontaneously in the first four groups concerns the diffusion of a specific geriatric culture and expertise within the whole hospital and its units[g],. This covers different dimensions:

- Raising awareness and openness for a geriatric culture, which implies a change of mentalities and awareness among teams (physicians, nurses, other disciplines) about the complex care needs of geriatric patients;
- Training and transfer of specific knowledge needed for the care and support of geriatric patients;

"Geriatrics is a dynamic service: we sensitize on 'themes' (like fixation, fall prevention, nutrition), organize specific 'geriatrics days', develop 'care pathways, etc."

- Assistance and coaching of the colleagues on non G-units;
- An in general greater openness towards the geriatric patient

This evolution is beneficial for the concerned patients because the units that cooperate with the IGCT have more knowledge and better take into account their needs. Nevertheless, even when this strength is recognized, the participants in the second round of discussions also emphasized that much remains to be done to mobilize all non G-units for this approach and to raise awareness among all actors:

- The message needs to be repeated continuously in order to engage all actors and all departments, even if many initiatives exist already (like thematic days, training, posters, …);
- The dialogue with the department head is considered as a key element for the cooperation and ideally, it should take place more frequently than what is possible today.

"For spreading the geriatric culture, it is very important to talk to the physician and the head nurse. The more you go there and talk to them, the better... Many contacts!"

g This diffusion is "potentially" throughout the whole hospital. In practice most IGCT do have an impact on a number of services, exceptionally on the whole hospital.

3. The specificity of the approach: a multi-disciplinary and holistic approach of the patient

The all-encompassing, holistic and multidisciplinary, approach of the patient has also been put forward as a crucial strength of the IGCT, as from the first wave of discussions. The comprehensive approach towards the patient is expressed by:

- The multidisciplinary communication;
- The multidisciplinary expertise;

"The patient is considered in his/her entirety, which allows detecting geriatric problems that are otherwise missed."

"Problems are fully analysed, which allows early detection of health issues before it is too late."

- The group spirit that comes with the multidisciplinarity;
- The multidisciplinary care for the patient and its added value.

The approach is regarded as more pro-active, more specific, and better tailored to the patient. It also translates into more complete patient files, addressing care needs in more domains. This information, especially when available electronically, can easily be shared and used by other caregivers.

4. Impact of IGCT on the process and quality of care (the total caregiving) in the hospital

The fourth key strength that was unanimously recognized by the participants from all groups is the impact and the many positive effects on the process and the quality of the provided care. This fourth strength is to be considered together with the impact on the patients and their family.

This impact is seen in the following effects:

- A faster detection of problems and at-risk patients;
- Faster action and intervention in general, as well as screening in an earlier stage;
- A better prevention of complications;
- Better coordination, collaboration and communication between disciplines;
- Better organisation of the teams and an enhanced integration with the caregiving teams on non G-units;
- Increased satisfaction of the first line teams (by which participants mean their "clients", the units in charge of the patient);
- The attention given to aspects which are not or less covered by the units like nutrition and the prevention of delirium;
- Improved care and support for the elaboration of the individual care plan for the patient.

5. Impact of IGCT on discharge and readmission

The fifth evoked strength is the impact on the discharge and readmission of the patient. A variety of effects, observed by the participants in their hospitals, were reported:

- A better preparation of the discharge, which ideally starts to be prepared as from a patient's admission (a.o. through direct, good communication with the patient's family and care givers, in concertation with the hospital's social service);
- An improved continuity upon discharge (seamless transition): in close cooperation with the social service, ensuring that the needed care is provided also when the patient is back home;
- A reduction of the number of re-admissions, mainly as a result of the above;
- The avoidance of hospitalisation due to a better consideration of the possible alternatives at the emergency services.

Importantly, none of the participants had quantitative or qualitative measures available to support these effects. An increased length of hospital stay was also mentioned, but during the second wave it was decided not to retain this effect. While it was confirmed that IGCT may indeed allow a shortening of the stay in some case, it might also lead to longer hospital stays – although it was pointed out that in such cases, the quality of the provided care is better, and the chances for re-admission are reduced.

6. Structure and functioning of the IGCT

The motivation of the IGCT itself and its very strong commitment to the missions that it is entrusted with have been evoked by several participants. Still, the notion of 'team' has been put into perspective by some, who consider that in their hospital it is yet too early to speak about a real team, while it could rather be called a 'virtual team'.

"I don't consider myself a team…"

Some specific experiences related to the functioning of the IGCT are also regarded as very positive (in no particular order):

- The screening to identify at-risk patients as from admission;
- The mobility of the team, which goes to the patient;
- The geriatrican making a tour around all departments: this triggers questions by the staff providing the care, allowing to make a deeper analysis of the patient's situation and a more robust formulation of recommendations;
- The re-assessment of nursing home patients as the staff does not always have a complete view on the persons' condition;
- The very positive experience of the presence of the IGCT at the emergency department, which is systematically organised three days per week (in a particular hospital).

7. The close cooperation between IGCT and the social service of the hospital

As a last strength, the faster activation of certain services was discussed. In particular, the close link between the IGCT and the social service was underlined. It is generally recognized that the IGCT activities bring along a more active cooperation with the hospital's social service. This allows:

- Enhanced possiblities to take into account different alternatives at the moment of the patient's discharge from the hospital;
- A faster detection of social problems, not just at the time of discharge, but also during the hospitalisation and sometimes even upon admission.

These two elements contribute to a better care provision for patients during their stay in the hospital and, at the moment of discharge, to a better orientation towards the most suitable extra-mural services or structures.

3.2.2 Weaknesses

Weaknesses mentioned were grouped under *9 main headings*. The four first are the most important and were mentioned in all four focus groups of the first wave.

1. Shortage of geriatricians

Although not directly related to the IGCT as such, the lack of (availability of) geriatricians is a weakness for the functioning of the IGCT for whom the expertise and decisions from geriatricians are crucial to conduct their work.

"This is a real problem for us: we only have one geriatrician, who has no time to consult with the team."

"We only have telephone contact with the geriatrician, who is in charge of two campuses. And then we tell her which patients she must visit."

2. The purely advisory role of the IGCT

The purely advisory role of the IGCT is generally considered as (very) problematic. Caregivers of non G-units can freely decide whether or not to implement the recommendations. Hence, IGCT's notice that their recommendations are often not adhered to.

"It's already a success if they [i.e. the physicians] read our recommendations."

This weakness is linked to the fact that in most hospitals the initiative to invite the IGCT has to come from the physician in charge of the service. Patients who could benefit from the IGCT role are not necessarily identified and passed on.

The tension between economic versus patient interest can be at the origin of the non-implementation of recommendations. An example can be the decision by treating physicians not to implement the recommendations from IGCT as they believe it could extend the length of the stay, which would be financially unfavourable.

3. Resistance to IGCT of medical care providers (physicians)

All groups mentioned the lack of openness and even the resistance of some units and/or persons to the work of the IGCT. In the second wave, it was suggested to split this weakness in two different weaknesses, one specifically on resistance by physicians, and another one (mentioned below, see weakness 9) with regard to some units that are less cooperative than others. The attitude of some physicians is considered as a separate weakness.

"It's mostly the physicians who oppose rather than the nursing staff."

Physicians from non G-units are in most hospitals responsible for inviting the IGCT to assess a patient. In a minority of hospitals, IGCT can take the initiative even without formal invitation, based on the screening results.

Physicians are also needed to implement the IGCT recommendations and the inclusion of these recommendations in the discharge letter of the patient. Many different reasons were mentioned, such as:

- Personal attitude;

"Physicians don't think the consultation work is important nor has an added value."

"Some physicians do not take the liaison into account because most activities are done by nurses."

"They believe they know everything and have no need for advice."

- Potential conflicts of interest, e.g. on the length of stay of a patient.

4. Shortage of resources: staff, time and financing

In addition to the shortage of geriatricians, a shortage of other resources was also pinpointed as a major weakness:

- The size of the team, which does not allow to provide the adequate service, not even to visit all identified at-risk patients;

"The IGCT nurses are claimed by the geriatrician when there is a shortage of staff on geriatrics."

- The shortage of time to perform all the necessary tasks;

"There is less and less time for admissions and the work pressure keeps going up. Is this realistic?"

"Our coaching role is very important, but extremely intensive for the limited time that we have."

"We are just four FTE, and we have a lot of tasks…. We have no time to do it all."

- The impossibility to react fast to all demands in an environment that works 7/7 days and 24 hours;
- The insufficient financial compensation for some of the medical acts. In fact, 'technical interventions' are valued higher under current fee-for-service system than 'intellectual activities' Since geriatricians perform relatively many 'intellectual activities' (e.g. assessment, consultation, multidisciplinary collaboration) their income is lower compared to other medical disciplines.

"Also the workload of the geriatrician is steadily growing, but there is no recognition for it."

- there is a risk that due to cost-savings, length of stay will be even more reduced, with related effects on the screening procedures (see also the next weakness below).

5. Quality of the screening

The screening of patients aged ≥ 75 years is compulsory at the moment of hospital admission. However, the quality of this screening is not always up to standard, if it is done at all. One hospital reported results of a quality test in which only 42 % of the performed screenings were up to standard. Different situations exist in this respect, from hospitals where the screening is done systematically in all units (with differences in quality) to hospitals where no screenings are done by the units and where the IGCT actually performs the initial screening (or does it for a limited number of units). In some hospitals it is andatory to report the screening result in the electronic patient file. This proves to be only a partial solution as there is no warranty of quality of the screening. When performed by the units, quality is always an issue - with training actions to increase quality and to avoid false positives and negatives. Such training efforts need to be repeated regularly because of staff rotations and because of the need to remotivate the staff regularly.

Also to be noted is that hospitals work with different thresholds upon which patients are referred to IGCT, and such thresholds can deviate from what is recommended in the scientific literature. Thresholds may be adjusted to accommodate practical concerns, e.g. to avoid too many 'positives' which could not be managed due to staff shortages.

6. Lack of geriatric training of medical and nursing staff

The lack of geriatric culture and training of the physicians and all the (para) medical staff in the different non G-units is considered as a weakness. This explains the weakness above but has also other consequences for the IGCT, especially at the level of the implementation of recommendations.

7. Quality and content of the discharge letter and the impact extra-muros

By quality of discharge letter, participants meant whether the recommendations made by the IGCT were included or not. From the point of view of the impact of the IGCT work, this is considered important as it would ensure that the treating GP would be aware of the assessment and of the recommendations and could ensure their further application (if relevant) after discharge.

It appears that one of the barriers for hospital physicians to adhere to the recommendations is the fact they have themselves not followed–up on the advices. Sending the recommendations through to the GP would make this apparent.

This weakness should (in theory) disappear with the new legal base for the IGCT as the Royal Decree clearly states that the recommendations from the IGCT should be communicated to the GP of the patient.[13] Based on discussions among participants it appears that many are not yet aware of this change, that those who are aware are curious to see whether this will work in practice (most expect serious resistance on the part of the physicians of non G-units). Still, examples do exist of IGCT advices that are sent directly by the geriatrician to the GP without passing through the specialist physician of the service in charge inside the hospital, which implies that two letters are sent.

8. Mobilization of allied health professionals

Two different problems have appeared in relation to expertise of allied health professionals: one internal in the IGCT, one linked to the quality of care (and application of recommendations).

Expertise of allied health professionals is available inside or to the IGCT to perform the assessment. Barriers exist at the level of availability of resources (linked to weakness 3 above) but also regarding how allied health professionals are being financed. For instance, self-employed allied health professionals are not rewarded for their participation in multidisciplinary assessments and are therefore reluctant to take part (the case for physiotherapists in various hospitals). Some hospitals do pay on their own budgets (e.g. physiotherapists receive a compensation for their time spent on multidisciplinary collaboration that equals the compensation that they would receive under the fee-for-service system for that time) to avoid this barrier.

When the IGCT identifies the need for allied health professionals, there is a clear risk that the treating physician will not pay attention or follow the recommendation and order the treatment. Some IGCT teams therefore start the treatment themselves by involving the allied health professional as part of the IGCT function. In such cases actual treatment is included in the IGCT intervention.

9. Little openness to IGCT of some units

Terms that were used to express this weakness include lack of support from certain units, lack of recognition, lack of attention to what IGCT says and lack of openness or even complete 'blocking',. Some nurses can have similar attitudes to what was mentioned above on physicians, and consider the work of the IGCT as 'luxury'.

"Colleagues regard the liaison as a 'luxury function' that comes to interfere."

3.2.3 Opportunities

Eight distinct opportunities have been identified.

1. Transfer of knowledge and awareness-raising

IGCT can play a role in training staff of non-G units of the hospital and spreading the necessary knowledge to treat patients with a geriatric profile in an adequate way. Many examples were given of practices aimed at the transfer of knowledge and expertise, among which: posters; trainings and thematic days organized for both staff of the hospital, and nurses and allied health professionals from the region (e.g.nursing homes);

"There is a lot of interest for our thematic days."

In addition to creating a geriatric culture, participants do consider IGCT training sessions as an opportunity to demonstrate the added value of multidisciplinarity other non_G-unitsThemes mentioned for training sessions include fall prevention, dementia, nutrition, use of physical restraint use.

2. Cooperation with GP and care services at home / trans-mural care (emphasis on two-way communication and 'dialogue')

There was a consensus in the discussions that there is a high potential in an increased cooperation with primary care. It was not always clear how this could be handled or organized, particularly during the first wave groups. The second wave of groups confirmed the relevance of this item as an opportunity for the IGCT. Various themes were suggested for a better cooperation with the GP both before and after admission at the hospital. Themes are comparable to those suggested for training of staff inside the hospital (nutrition, fall prevention,…). Participants saw a role for IGCT in the trend toward 'Hospital at home' (HAH) supporting primary care and contributing to the link between primary and secondary care to make HAH feasible.

"There is much potential in a closer cooperation with GPs. We still have to explain too often to the GPs what we actually do."

3. Digitalization

Many examples were given of good practices based on the availability of an electronic patient file that is accessible to and used by all professionals involved in the care for a patient both inside and outside the hospital. This goes from the speed of information exchange between services, to the availability of screening results and the direct sending of the IGCT recommendations to the treating GP of the patient. The difference between hospitals with or without electronic patient files was also striking as productivity and impact of the work of the IGCT was seriously improved when electronic filing and exchange are available. The second wave confirmed that digitalization of the hospital processes should be considered as an opportunity for the IGCT work through better exchange and as a means to provide multidisciplinary services.

4. Increasing number of patients aged 75+

Originally mentioned as a threat (as the ICGT are currently already under resourced to deal with the current workload), this was also considered as an opportunity for the IGCT in the second wave. This trend underlines the importance of the IGCT:

"The increasing number of patients older than 75 is an opportunity: we will be indispensable."

5. The improved orientation of patients inside the hospital

This is an item that appeared more formally during the second wave. Improved orientation of patients was initially mentioned as strength, but it was decided this was more of an opportunity. The added value of the IGCT in terms of patient orientation was particularly striking in hospitals where IGCT work closely with the emergency department. The testimonials indicate that hospitalizations are avoided and that patients, when entering the hospital, are often better oriented to the service corresponding to their care needs.

"Faced with a geriatric patient, the surgeon will discharge the patient and suggest coming back the next day but through emergency, to be oriented to another service, most likely the geriatrics service".

6. The stability / sustainability of IGCT

The payment system for the IGCT has recently been adapted (see chapter 2). This new payment system is now structurally embedded in the larger hospital payment system instead of temporary and yearly renewably funds for pilot projects. This is considered as an opportunity for the IGCT to ensure the sustainability of their functioning.

7. Demonstrating the importance of IGCT

Participants see themselves as 'ambassadors' of the IGCT concept. They consider it is their responsibility to demonstrate the importance and added value of the IGCT work. The frustration regarding lack of evidence on the care model's effectiveness (see chapter 1) is clearly present and partially explained by the huge differences in approaches between hospitals as a factor making it more challenging to build the necessary evidence.

There exists consensus that IGCT have a societal role to play by contributing to less (re-)hospitalizations and institutionalizations (e.g. alternatives for nursing homes), less complications, shortened hospital stays (because of complication prevention), a better quality of care and better care coordination. The introduction of 'the special nursing title and special nursing competencies in geriatric care' was also mentioned as a way to recognize the importance of appropriate geriatric care.

8. Embedding the IGCT within the institution

The comparison is made with the social services of the hospital which have managed to be truly embedded. Achieving such level is possible for the IGCT and considered an opportunity.

3.2.4 Threats

Five threats were perceived by the participants.

1. Shortage of personnel with a specific expertise in geriatric care

This threat confirms two of the three most important weaknesses described above. Participants notice that there are not enough geriatricians. There is little interest among younger people to start this type of lengthy studies, also because of the lower fee levels compared to other specializations. Furthermore, there is a general shortage of qualified staff, notably in the understanding that more senior staff is necessary to qualitatively perform the IGCT work. This shortage of personnel is considered as a threat due to the imbalance between demand and capacity to deliver the service.

2. The evolution of the payment system

The envisaged budgetary constraints in the health care sector are creating a sense of insecurity among IGCT. It is feared this could mean a reduction of staff (FTE) which is not compatible with an increased volume of patients and (thus) of the related workload.

3. The lack of support and recognition: by other units and by management

Generally, IGCT team members feel a lack of recognition for the work they do. This is partially explained by the lack of evidence on the effectiveness of IGCT. This is frustrating for the persons involved as they feel the need to collect this information, but have no time to do it. Furthermore, the complexity of studying the effectiveness of IGCT has been put forward.

"How can we prove that through our work, accidents (like falls) and readmissions have been prevented?"

Management support for IGCT is often lacking. Whenever available, it was said to be of paramount importance for the success of the IGCT. A lack of such support has consequences as other tasks or services are treated with higher priority. Even the geriatric department might ask the support of the IGCT at moments of shortage of staff (i.e. to replace nurses from the geriatric unit who are on sick leave). It also appears to be quite common that part of the ICGT budget is used for other purposes, for example to pay staff (e.g. psychologist, social worker) who in reality do not work for the ICGT.

4. Risk of demotivation

The conditions within which IGCT work can be demotivating, which can be considered a threat. Many of the factors mentioned above play a role in this respect, but mainly the high expectations versus the limited resources, the lack of recognition and the non-implementation of recommendations are at the basis of this threat.

5. Increasing number of patients aged 75+

All groups in the first wave mentioned the increased number of older persons as a threat for the IGCT. This is clearly linked to the shortage of staff and the impression not to be able to cope with the increased workload of the team. This threat was put into perspective during the second wave as participants in the second wave groups said that the ageing population is an opportunity as well.

3.3 Leverages and barriers for an effective functioning of IGCT

In this section, different elements are presented that can constitute possible leverages and barriers for the optimal functioning of IGCT and their impact.

3.3.1 Leverages

The new legislation (chapter 2) aims to solve some of the problems that currently exist and, if applied, might significantly enhance the impact of IGCT. For example the lack of implementation of recommendations was mentioned as a weakness, as well as the fact that the physicians of non G-units, who can decide whether or not to include the IGCT recommendations in the discharge letter to the GP, act as a filter. The new legislation mentions the IGCT recommendations should be included in the discharge letter. This will mean, according to the participants, a significant improvement in terms of potential impact at two levels:

- The application of recommendations after discharge as the GP of the patient will be informed (and in the future probably also the patient and informal caregivers if they will have access to the patient file)
- In terms of the application of recommendations during the hospital stay. It appeared from the focus groups that physicians often refrain from sending the IGCT recommendations to the GP because they did not follow them themselves. The knowledge that the GP will be aware of the recommendations, will increase the pressure on the hospital physician to implement them. As one participant stated:

"Even informal advice is not without any obligations".

The positive impact of the new legislation should however not be taken for granted, based on the insights from the focus groups. High levels of resistance can be expected in some non G-units against applying the legislation. Participants were not always aware of this 'innovation' in the new legal base, but when they were; there was certain scepticism on its feasibility. One participant mentioned they are implementing this new approach and sending the IGCT recommendations directly to the GP, with a concern about the reactions of the heads of non G-departments.

Existing **good practices** appear to have promising potential for strengthening the institutionalization and impact of the IGCT. It would therefore make sense to further study such practices and to give them visibility, so that they can be more widely implemented. Some good practices were identified through the groups:

- The IGCT recommendations being systematically attached to the discharge letter, which is sent automatically to the GP;
- Focussing on optimising the work done at the emergency departments: good screening and orientation of the patient to the right unit;
- A simple way to remind the nursing staff in the various departments about the do's and don'ts in the care for geriatric patients (e.g. regarding nutritional intake) by communicating visually with posters;
- To facilitate a seamless transfer of a geriatric patient from an nursing home to the hospital (and back), a specific 'transfer form' or 'transfer document' can be used;
- Having an office dedicated to the IGCT;
- The IGCT being directly linked with the team of the day hospital: this allows exchange of capacity; as both teams have similar needs in terms of expertise and multi-disciplinarity;
- Adischarge manager being a member of the IGCT.

Performing the screening before a planned admission was identified in one group in the first wave and confirmed in the second wave as a way to improve the functioning of the IGCT and its potential impact. This could be done during an outpatient consultation at the non G-service where the patient will be admitted. Alternatively, a more thorough screening could also be done in the geriatric day hospital prior to an elective admission. The IGCT could more easily be involved in such pre-surgery assessments, saving time and increasing quality.

We remind this approach would help to handle the problem of time shortage that the IGCT often faces when patients have a short LOS. In such cases, IGCT recommendations can sometimes only be issued after the patient has already been discharged. Speeding up screening and assessment would help to provide better IGCT care for such patients and thereby potentially avoid complications or readmissions.

Screening and even pre-assessments could also be improved and provided before admission through other means, such as the Belrai. This system is expected to significantly improve the provision of care for patients coming from nursing homes. Local services in charge of the coordination of care in the home setting (e.g. SEL/GDT) as well as 'GP circles' could also play a role in this regard. They can mainly contribute to a better planning and identification of problems, avoiding admissions through the emergency departments.

The focus groups also identified value that could be generated by better **supporting primary care (outside the hospital) with geriatric expertise**.

"Geriatric expertise is born in the hospital; one can imagine bringing this expertise outside".

A lot of initiatives exist at the local level to handle typical geriatric problems like, for instance, incontinence and dementia. IGCT expertise could be used to support such initiatives.

Many of these local initiatives can be considered as good practice, but little is done to improve their transfer and scalability. This is probably not a primary role for the IGCT, but they could support and contribute in knowledge sharing of good practices.

A second potential route is through the training of nurses who are active in the home setting. Most often, they have no or limited training in geriatrics. Internships at an IGCT could be a way to provide them with basic knowledge and skills in the geriatric approach. More traditional training approaches were also mentioned as a way to transform the (negative) image many nurses have of geriatrics.

Building an evidence-base on the effectiveness of IGCT would constitute an important instrument for speeding up the acceptance and institutionalization of IGCT. The challenge is to define realistic and feasible indicators. The outcomes to be measured for the impact need to be relevant to the geriatric work. The following suggestions for domains of outcome measures were made (in no particular order): quality of life of the patient, satisfaction of patient and of family / informal caregivers, quality of diagnosis (diagnosing illnesses not yet identified), incidence of delirium, lowering of poly-medication (number of drugs administered), correcting errors in medication, incidence of falls, incidence of pressure ulcers, decrease in malnutrition, geriatric knowledge transferred to other units.

3.3.2 Barriers

A **lack of institutional (management) support** and belief in the added value of IGCT appears to have negative effects on the general perception of and attitudes towards the IGCT amongst various hospital units. While some participants in the groups acknowledged the crucial importance of having the explicit support from their management, such support seems to be missing in a large number of cases.

"It is tremendously helpful if the geriatrician is in the management board."

The striking **wide variety in the functioning of IGCT** across the participating hospitals was found. In such situation, there is no straightforward 'one size fits all solution' that can optimize the functioning of IGCT on a national level. Noticeable differences were identified in the following aspects:

- Usage of an electronic patient records;
- IGCT provided for planned admissions only or only for acute emergency admissions or for both;
- The approach to screening: performed by the units or the IGCT team, systematically for all 75+ patients or not; for all hospital admissions or specific units only, … ;

- IGCT being mobilised solely upon demand or also upon the initiative of the IGCT itself;
- Trigger of positive score during screening: automatic visit or only based on invitation;
- Possibility for IGCT and geriatrician to visit a patient in a unit without formal invitation from the head physician;
- Invoicing of IGCT work : especially whether work of the geriatrician is being charged (not in the case there is no invitation from the head physician). Some hospitals find ways to always invoice; others do not.

The **absence of evidence** about the effectiveness of IGCT is an obstacle for achieving greater openness and receptivity among medical and nursing staff in the hospital. IGCT teams expressed the willingness to take the initiative to study the value of their work themselves. They cannot do this alone, but require collective efforts in collaboration with the scientific community

A condition would be a harmonization of the way in which IGCT work in different hospitals. This implies a professionalization of the IGCT: defining what is done in which circumstances, how much time is spent on each activity and also to measure the outcomes achieved.

Participants mentioned this may also imply the development of common tools and procedures. Such harmonization could go up to the development of 'balanced scorecards' which are used to benchmark IGCT on performance measures.

"How to prove that somebody did not fall, because we detected that his/her glasses were not strong enough?"

"How to prove that readmissions have been avoided? It's especially difficult considering that we are dealing with the most difficult group of patients. The number of readmissions will inevitably remain quite high…"

Based on the results of the focus groups, it appears that the **difficulty to work with certain non G-units** is a reality in all the hospitals. The solution for successful cooperation lies in a win-win which can be different on a case-by-case basis.

There is broad agreement that the system with '**geriatric resource nurses**' (which was included in the Royal Decree of 2007 but deleted during the 2014 revision) has not been working as expected. Nevertheless, the abolition of 'geriatric resource nurses' from the legal obligations leaves a gap in those cases where it did work. The disappearance of geriatric resource nurses in units is a concern for the functioning of IGCT and their collaboration/partnership with non G-units.

"Three quarters of the geriatric resource nurses are also head nurse. They simply don't have the time."

3.4 Suggestions for improving the effectiveness of IGCT

Below are a series of suggestions for improving the effectiveness of IGCT, based on the results of the SWOT analysis and organized per type of actor(s) who may put these ideas into practice.

3.4.1 What can be done by policy-makers?

- **Promote experience exchange and peer learning** among the IGCT from different hospitals. Such exchanges did exist when the pilot programme was started, but were stopped after a while. It is clear that today the way IGCT are working is extremely diverse and that the exchanges between IGCT teams are very limited. Starting up a new experience exchange program will definitely have a high added value and will contribute to standardising the service provided by IGCT teams;
- **Provide support to hospitals when implementing the innovations** included in the new legal base. An example is to assist hospitals in how to cope with resistance from physicians against the measure to send IGCT recommendations directly to the GP upon discharge of the patient;
- **Develop 'good practice' guidelines for the organisation and functioning of IGCT**, do this in a participative process with regular review. This measure should contribute to the dissemination of good practices, to the standardisation of the service of the IGCT and to enhance the quality and efficiency levels of the work performed by IGCT;
- **Multiply and disseminate existing good practices and tools** (e.g. posters, concepts for thematic days, care pathways, …);

- Develop, test and promote the use of **indicators** to collect evidence about the effectiveness of IGCT;
- Promote the education of specialist geriatric nurses (**advanced practice nurses**), to compensate (partly) for the shortage of geriatricians. Stimulate programs in evening courses to allow career reorientations;
- **Clarify the role of IGCT in emergency departments** as the new legal base could be interpreted in a way the intervention of the IGCT is not possible anymore. The potential misunderstanding is whether patients at an emergency department should be considered as 'hospitalised'. Some hospitals understand the new legal base in a way that patients in emergency departments are not (yet) hospitalised and therefore the IGCT has no role to play as long as these patients are not admitted to a service.
- **Revise legal and financial rules to support innovation** (e.g. advanced practice nursing).
- **Leverage on the knowledge of the pilot experiences.** Pilot programs were launched back in 2007-2008. With the new legal base, hospitals which were not part of the pilot program have to set up an IGCT. These hospitals could benefit from the experience and knowledge of other hospitals, as one of them said:

  "We went a long way".

3.4.2 What can hospitals do?

- **Speed up the digitalisation of individual patients records** as it is likely that such tools incerase the quality and efficiency of the work of IGCT, especially in terms of communication;
- **Include the IGCT advice, validated by the geriatrician, in the discharge** letter (this can be automatically done by the I.T. system) as prescribed by the new legalislation;
- **Let the screening be done by the staff in the various departments**, but make this work as easy as possible for them (e.g. make sure the IT system pre-fills those sections of the forms for which information is available already);
- **Consider hiring specialist geriatric nurses**, to take over certain tasks that are currently performed by geriatricians;
- Promote as many **personal contacts** as possible between the members of the IGCT (preferably its head nurse and the geriatrician) and the staff of non G-units (e.g. regular visits by the geriatrician to departments; explanations by the IGCT about the recommendations issued for patients);
- Consider to perform the **screening at pre-admission** for elective hospitalisations. This was suggested and apparently is very exceptionally done. It would speed up the work of the IGCT which may be critical for patients with very short LOS;
- **Give visibility to the work of the IGCT** and highlight their added value for the hospital;
- **Stimulate department heads to cooperate closely with IGCT for the geriatric patients on their units**. Require justifications when the IGCT is not consulted for at-risk patients;
- **Reinforce the two-way communication extra-muros and intra-muros about geriatric patients**, their needs and care project;
- **Focus on the key role played by and in the emergency department**, notably for determining the care pathway and for orienting the patient to the most suitable department (or day hospital). Ensure openness towards IGCT in the emergency department, as well as a smooth cooperation between this department and the IGCT in the benefit of patients and to avoid unnecessary admissions;
- Considering that there are different multidisciplinary and/or advisory teams active in the hospital (like IGCT, oncological care, palliative care, pain management, …), it is recommended to formally **arrange the coordination of interventions by the concerned teams in order to avoid competition and work overlap**.

3.4.3 Suggestions for IGC teams themselves

- **Develop good relationships with the chiefs of the medical department**, because the openness towards IGCT among the staff working in departments will depend importantly on the department head's attitude towards IGCT. Try to meet regularly with department heads and **head nurses**. Make clear the previous achievements and added value of the IGCT for their care teams and patient population.
- **Keep in mind that introducing a 'geriatric culture' in the hospital and all its units cannot be done overnight**. Messages will have to be repeated many times, and progress might appear slow. Do not get demotivated by apparent resistances to the work of IGCT. Try to communicate clearly its added value and give visibility to successes, however small. Make allies in the hospital, preferably among department heads, head nurses and in the hospital's management team; they can act as ambassadors for the IGCT;
- Take **a pro-active role in the organisation of trainings and awareness raising events** in geriatrics with clear objectives and targets.

"As a member of the IGCT, you have to take a position and 'sell your product' in the hospital."

- **Prioritise cooperation with those departments that show interest and openness in working together with IGCT**. From there, the word about the added value of IGCT can be spread;
- **Perform quality checks on the screenings** and take corrective actions if needed (briefing sessions on how to perform the screening);
- **Cooperate with other IGCT to harmonise service provision**. This includes the development of common tools, standards of work and also the development of balanced scorecards to be able to benchmark against colleagues and strive for continuous improvements. Such cooperation will also ease assessing the effectiveness of the work of IGCT and the exchange of best practice;
- **Multiply and improve the dialogue and exchange with primary care** (home setting, GP, residential care settings) usingvariable communication tools (e.g. email, Skype,BelRAI).

Key points

- **IGCT have high face validity contributing to a multidiciplinary and holistic approach of older persons with a geriatric profile and to a dissemination of the geriatric expertise and culture throughout the hospital. They are, despite the absence of effectiveness evidence, believed to shorten LOS, decrease readmission rates and improve functional outcome of older persons.**
- **The implementation of IGCT in Belgian hospitals is very variable (e.g. case-finding and assessment methods, role of inpatient geriatric liaison teams on emergency care departments).**
- **The demand for geriatric expertise clearly outweighs the supply of available resources (as well as the budgets allocated to IGCT). Furthermore, the shortage of geriatricians as well as other (e.g. nursing) staff with a specific expertise in geriatric care was identified as a major barrier for succesfull implemenattion.**
- **The increasing number of older persons (with a geriatric profile) is expected to sharpen this imbalance between the demand and supply side in the near future. On the other hand , it is believed that it will also make IGCT indespensible.**
- **Despite the presciptive legislation (and failure of hospitals to implement these rules), different pockets of innovations ('good practice') exist (e.g. case-finding on pre-hospital consultations for elective patients, integration of IGCT recommendations in the discharge letter via the electronic patient record). Yet, they are not sufficiently picked up by other hospitals as there are no knowledge sharing platforms.**

4 INTERNATIONAL CONTEXT OF INPATIENT GERIATRIC CONSULTATION TEAMS

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4.1 Introduction

In this chapter we describe the international context of inpatient geriatric consultation teams based on a scoping literature review, an international survey study and semi-structured interviews with health care professionals and researchers.

4.2 Methodology

4.2.1 Scoping review

Description: the process of a scoping review can be best described as 'summarizing a range of evidence in order to convey the breadth and depth of a field'.[52] Some key differences with a systematic review include formulating broad research aims (i.e.; no focused questions with narrow parameters), developing and refining in- and exclusion criteria for papers during the review process (i.e. post hoc instead of a priori) and omitting methodological quality assessment of included research papers.[52, 53]

For the process of this scoping review, a refined version of the methodological model of Arksey en O´Malley (2005) was applied.[52] As such, the review process included six steps: 1) formulation of the research aim; 2) identification of relevant papers; 3) selection of relevant papers; 4) data charting; 5) sorting, summarizing and reporting of results and 6) a consultation phase.

Formulation of the research aim

Based on a stakeholder-meeting (i.e. 11 October 2013) and consecutive discussions within the research team, the final research aim for this chapter was *'to describe best-practices of IGCT in a selection of countries (except for Belgium), concerning the composition, operationalisation, financing and evaluation of IGCTs, including determining if these aspects of IGCTs are based on specific requirements (e.g. legislation, guidelines, hospital characteristics).'*

Identification of relevant papers

A broad and comprehensive search strategy was performed:

- Database search: Medline (i.e. Ovid MEDLINE), CINAHL and EMBASE were systematically searched between 17 April 2014 and 22 April 2014. A single search string was used for Chapter 4 'international context of inpatient geriatric consultation teams' and Chapter 5 'quality criteria for the evaluation of inpatient geriatric consultation teams' (see Appendix 2 for search string).
- Hand search: The reference lists of all included papers and potentially relevant, but excluded reviews were hand-searched for additonal relevant literature.
- Grey literature search: The database and hand search resulted in a selection of studies that originated from several countries. For these countries, a search for grey literature regarding IGCT (e.g. legislation, guidelines, research reports) was conducted in the databases OAIster, OpenGrey, OpenAIRE, and Google Advanced Search. Search terms for the detection of Dutch publications (originating from the Netherlands) in Google Advanced included 'geriatrisch', 'geriatrie', 'ouderenzorg', 'ouderengeneeskunde', 'medebehandeling', 'consultatie', and 'liaison'. Search terms for the detection of French publications (originating from France) included 'gériatrie', 'soins gériatrique', 'soins aux personnes âgées', 'corresponsable de traitement', 'consultation' and 'liaison interne gériatrique'. Additionally, websites of governmental institutions and national professional organisations for geriatrics and gerontology were searched, and international experts (identified through the network of the research team) in these countries were contacted. Overall, the grey literature search was less specific than the database and hand search, thereby

allowing for the inclusion of other 'comprehensive geriatric care (CGA)' team-based models than IGCTs.

Selection of relevant papers

The research question was broken down into a PICO format (Population, Intervention, Comparison and Outcome) to guide the decision on initial in- and exclusion criteria for study selection. Since a priori defining strict selection criteria is not suitable for scoping reviews with broad research questions, the initial criteria were further refined during the entire study selection process. Thereby, an iterative process of discussion within the research team was used. In order to create a more specific search strategy, revisions included adding selection criteria with regard to publication date (e.g. focus on studies published ≥ 1999), concerning study design (e.g. reviews were excluded, but were hand searched to identify additional references; grey literature was identified through a separate search strategy) and study setting (e.g. exclusion of IGCTs solely intervening in the primary care setting). IGCTs solely intervening at the emergency department (ED) were also excluded, as the scope of this review was on geriatric consultation models for hospitalized patients, and as the setting and organization of care between EDs and non G- units differs substantially. Furthermore, the criterion that IGCTs had to focus on patients with a geriatric risk profile was abandoned, as a considerable amount of papers did not mention the detection of high-risk patients (e.g. screening) as a core procedure. Also, a decision to exclude papers regarding IGCT in Belgium was made, as the purpose was to describe the international context of IGCT outside of this country. For reference and comparison, the Belgian context of IGCT was described in a previous section of this report.(see Chapter 2). The final version of the selection criteria can be found in Table 11. The selection process for the aforementioned parts of the threefold search strategy is detailed below:

- Database search: The final search strings used in the three databases contained inclusion criteria regarding the language (e.g. English, Dutch and French), publication date (e.g. published ≥ 1999) and study design (e.g. no editorials and letters to the editor) of papers, thus increasing specificity of the search. Identified records were merged and duplicate references were removed. Next, all records were screened for suitability based on title and abstract only. Then, papers identified as potentially relevant were screened in more detail through their full text. Two researchers performed the selection process, each screening half of the identified studies. In case of ambiguity or uncertainty about study suitability, a final exclusion decision was made through consensus with three other researchers. The final decision was marked for each record in alignement with the PICO format and by indicating exclusions based on study design and publication language (see Table 11). Papers of which the full texts were not available via the searched databases, the KU Leuven search engine (Limo, http://bib.kuleuven.be/ub/zoeken/limo) or through members of the research team were excluded.
- Hand search: Selected studies and excluded reviews were hand-searched for additional relevant references. Applicability for inclusion was discussed within the research team. Since reference lists indicated that studies regarding IGCT were also conducted between 1980 and 1999, studies published ≤ 1999 were also screened for their relevance. As such, older publications regarding IGCT were solely identified through hand-searching.
- Grey literature search: Grey literature databases, websites of governmental institutions and national professional organisation for geriatrics and gerontology, from the countries that had published papers regarding IGCT, were screened systematically. (see Appendix 3)

A flowchart detailing the process and results of study identification and selection is provided in Appendix 4.

Table 11 – PICO format of research aim and applied selection criteria for database and hand search

	Applied PICO	Inclusion criteria	Exclusion criteria
Population	Geriatric patients hospitalized on a non-geriatric unit	• Patients aged ≥ 65 years • Patients hospitalized on a non-geriatric unit, including intensive care units (ICU)	• Outpatient setting (including day care hospital) • IGCTs solely intervening at the ED (e.g. IGCTs providing consultations at both non-geriatric units and the emergency department are included)
Intervention	CGA: 'a multidimensional interdisciplinary process focusing on determining a frail older person's medical, psychological and functional capability in order to develop a coordinated and integrated plan for treatment and long term follow up'.[54]	• Use of a CGA process • Use of a multidisciplinary approach (e.g. minimum 2 disciplines represented in the IGCT)	• Syndrome-specific units or teams (e.g. IGCT solely focussing on delirium prevention and management) • Psychiatric, psycho-geriatric and palliative consultation teams • Hands-on care only: care recommendations are directly implemented or ordered by the IGCT (e.g. no recommendations are to be implemented/ordered by the care team primary responsible for the patient) • Co-management care: the availability of expertise of two (teams of) professionals working together in patient care, with shared responsibility for care management and clinical outcomes.[22]
Comparison	n/a	n/a	n/a
Outcome	Description of the composition, operationalisation, financing and/or evaluation of IGCTs, including requirements on which these aspects are based (e.g. legislation, guidelines, and hospital characteristics).	Description of at least one of the following aspects of IGCT care: • Team composition • Operationalisation (e.g. process of care) • Financing • Methods used to evaluate IGCT care • Criteria on which aspect 1 to 4 are based	n/a
Study design and full text availability	n/a	• Experimental research (RCT,nRCT), pre-post implementation studies) • Descriptive research • Grey literature (e.g. law, guidelines, research reports)	• Review designs (reference lists were hand searched) • Published abstracts and conference proceedings • Editorials and letters to the editor • Papers of which full text is not available
Language	n/a	• English, Dutch, French	n/a
Setting	n/a		• Studies concerning IGCT in Belgium

n/a = not applicable; CGA : comprehensive geriatric care; ED = emergency department; ICU = intensive care unit; RCT = randomized controlled trial; nRCT = non-randomized controlled trial

Data charting

An initial data charting format was developed and independently tested by two researchers for 10 included papers, determining if the extracted information was in accordance with the study's research aim. Slight adjustments were made based on suggestions from the research team during the data charting process (e.g. changing answer options, adding more detailed items regarding the financing of IGCT). The final version (Appendix 5) entails information concerning: 1) the general characteristics of included studies; 2) the composition; 3) operational aspects 4) evaluation and 5) financing of the IGCTs.

Sorting, summarizing and reporting of results

Descriptive analyses were used for data synthesis and reporting. The results were divided into several themes, including the composition, operationalisation, financing and evaluation of IGCTs. No quantitative analyses regarding the effectiveness of the IGCT care model were conducted as this was outside the scope of the current report.

4.2.2 International survey

Development of the questionnaire

- Drafting of the questionnaire. Relevant themes and questions for the questionnaire were formulated based on information obtained through the aforementioned scoping review, a previously conducted survey regarding IGCTs in Belgium[37] and the expertise of the research team. The provisional English questionnaire contained 30 main questions and 39 subquestions grouped under six themes: 1) general information about the respondent and the hospital; 2) general information about the IGCT; 3) detection and selection of frail older patients; 4) IGCT assessment and recommendations; 5) implementation of IGCT recommendations; and 6) IGCT performance. Different types of questions were used, such as closed-ended questions (multiple-choice and forced choice), open-ended questions (free text fields and tables to be filled out) and Likert-type scales.
- Validation of the questionnaire. A panel of 24 Belgian experts with expertise regarding IGCT was selected and asked to judge the content validity of the English questionnaire. The selection of experts was balanced for region of employment (i.e. Flanders, Wallonia and Brussels) and professional background (i.e. head nurses of the Belgian care programme for geriatric patients; geriatricians; IGCT nurses, occupational therapists and psychologists; nursing managers; and an employee of the Federal Public Service – Health, Food chain safety and Environment). The experts were invited per e-mail (June 2014) to return the questionnaire within 2 weeks. A financial reward (€50) and a reminder after 10 days (if needed) were provided to stimulate the expert's participation. Experts were asked to indicate whether an item was formulated clearly and understandable using the answers: 'yes' or 'no': and to rate each item of the provisional questionnaire on its relevance using a 4-point Likert scale, ranging from 'not relevant'' (score 1), ''somewhat relevant'' (score 2), ''quite relevant'' (score 3) to ''highly relevant'' (score 4). In addition, they were encouraged to give their recommendations for the revision of the wording, relevance and/or elimination of individual items.[55, 56]

  An *item content validity index (I-CVI)* was calculated for each item, indicating the extent of agreement between experts about the relevance of an individual item. The I-CVI is calculated as the proportion of experts who rated its content as valid (i.e. who gave the item a relevance rating of 3 or 4). The applied cut-off values for favorable validation results of the I-CVI was 0.78.[56] As an I-CVI below 0.78 indicates problems with the relevance and/or wording of a specific item, these items were revised or removed from the questionnaire. A modified kappa statistic (k*), correcting for chance agreement, was calculated to counter the limitations of the I-CVI. Recommendations of Polit and Beck (2007)[56] were used to compute and evaluate the modified kappa index. Its value was evaluated as fair (between 0.40 and 0.59), good (between 0.60 and 0.74) or excellent (> 0.74).

  The *scale content validity index* (S-CVI) was based on two calculation methods. First, the average of all the I-CVIs was calculated ($S\text{-}CVI_{Ave}$). Second, universal agreement among the experts was calculated as the proportion of items on the questionnaire that achieved a relevance rating of 3 or 4 by all the experts ($S\text{-}CVI_{UA}$). The applied cut-off values for favorable validation results were 0.90 and 0.80 for the $S\text{-}CVI_{Ave}$ and $S\text{-}CVI_{UA}$ respectively.[56]

The results of the content validation (Appendix 6) were discussed within the research team and adaptations were made if necessary, resulting in a final version of the questionnaire. (Appendix 7)

- Translation of the questionnaire. The final questionnaire, developed and validated in English, was translated (forward translation only for feasibility reasons) into French to increase the response rate in France. (Appendix 8)
- Testing of the questionnaire. To improve the user-friendliness of the questionnaire and increase the response rate, an online survey application (Lime Survey®) was used. A geriatric nurse of the IGCT of the University Hospitals Leuven tested the survey application for its user-friendliness and time consumption.

Survey procedures

- Design and population. A prospective, cross-sectional survey design was used. The selection of countries was made through convenience sampling, based on the results of the scoping review and grey literature search. In addition, a short questionnaire was sent to colleagues and respresentatives of professional organisations in the countries that were identified through the database search in order to:
  - retrieve information on the scope of implementation of IGCT services (national/regional/small scale/not implemented);
  - to retrieve additional national grey literature regarding the composition, operationalisation, financing and evaluation of IGCTs;
  - to identify examples of best practices within these countries.(see Appendix 9)

  Reminders were sent if needed. If initial contact persons identified other relevant contact persons, the latter were also adressed. The final decision to include a specific country was based on a thorough judgement and discussion of the following aspects (See Appendix 9 for specific criteria applied):
  - the national scope of IGCT implementation;
  - the number of studies identified through the database and hand search;
  - the availability of grey literature concerning IGCT;
  - the existence of best-practice examples;
  - the possibility to obtain contact details at the hospital level and potential language barriers for survey participation.

  Further inclusion on the hospital-level was based on the identification of best-practices of IGCTs within the contacted hospital and the availability of contact details[h] of the geriatric department.
- Procedure. An electronic request for survey participation was sent to the selected hospitals in July 2014. Based on the availability of contact details, the survey was sent to the geriatrician or nurse of the hospital's IGCT or, if the latter were not available, to the geriatric department in general. The request included clear information on the purpose of the study, and instructions for completing the questionnaire. To improve the quality of the acquired data, instructions stated that the questionnaire should be filled out by a member of the hospital's IGCT (preferably the geriatrician), and in discussion with other IGCT colleagues. Since figures regarding the hospital setting (e.g. number of beds, annual number of patients and admissions) and the IGCT financing are not always available for IGCT members or might be difficult to interpret, respondents were asked to discuss these questions with an employee of the hospital's financial department and/or management. A copy of the questionnaire was attached to the e-mail, enabling discussion and information retrieval before online completion of the questionnaire. An online survey application (Lime Survey®), a financial reward of €100 and a reminder after three and five weeks (if needed, through e-mail and/or telephone contact) were used to achieve a higher response rate. If additional information from individual hospitals was needed, their responding IGCT members were contacted. The survey was closed after eight weeks.

[h] Contact details were identified through several strategies: screening of websites (hospitals and national professional organisations for geriatrics and gerontology), first author contact details mentioned in scientific papers and grey literature regarding IGCT, contact with international colleagues, and both e-mail and telephone contact with hospitals.

- Data analysis. After data collection, a descriptive analysis on the country-level (not per hospital) was conducted (e.g. measures of frequency, central tendency and dispersion depending on the measurement level and data distribution). Data were analyzed using SPSS for Windows version 20.0 (SPSS Inc., Chicago, IL, USA). A pre-final version of the reported results was discussed with an external expert panel in October 2014. Based on their comments, revisions were made.

4.2.3 *Semi-structured interviews with caregivers and researchers in the USA*

Rationale for interview performance

The majority of initial studies on the development, operationalisation and effectiveness of IGCT services have been conducted in the United States of America (USA) between 1975 and 1996. However, information retrieved through the literature review indicated that this care model is currently no longer widely implemented in the USA. Therefore, semi-structured interviews with key researchers in the field of geriatric care models in this country were conducted with a threefold purpose:

- To determine the scope of implementation of IGCT in the USA (national level, regional level or small-scale implementation). If applicable, information was requested about the underlying arguments for scaling down the use of the IGCT care model.
- To determine which types of care models are currently being used for geriatric patients who are hospitalized on nongeriatric units, as an alternative to the IGCT care model. In particular, information was requested on the level of implementation of care models including geriatric resource nurses (GRNs).[i]
- To obtain more detailed information regarding the structure, process and outcomes of these alternative care models, including information on the performance of screening and assessment to identify and comprehensively evaluate older patients at risk for functional decline.

Procedures

Participants for semi-structured interviews were selected by purposive sampling, focusing on health care professionals and researchers in the field of geriatrics. A request for interview participation was sent by e-mail in August 2014 and included clear information on the interview purpose and procedures. A financial compensation of € 100 and a reminder (if needed) were used to enhance participation. An interview guide approach was used to conduct interviews by telephone in August and September 2014. (Appendix 10)

Analysis

Interviews were audiotaped while concurrent note taking was conducted. As the interviews were not conducted for purely qualitative reasons, but were rather exploratory in the light of implementation of geriatric care models in the United States, no at verbatim transcription was made.[58] Alternatively, a second researcher made an extensive summary including all information given in the interview, based on both the audiotapes and notes. This summary was sent back to the interviewee for peer-review and to clarify pending questions that arose while analysing the interview.

4.3 Results

In this section we first describe the results of the peer-reviewed literature retrieved through the database and hand search. The grey literature is addressed in a separate section as the nature of these documents differed substantially from the research-based studies in the peer-reviewed literature. For example, some documents described the level of implementation of IGCT on a broader (e.g. national) level, while others concerned legislation or position papers about how care should be organized. Grey literature was summarized for countries identified through the database and hand search (Canada, France, Germany, Taiwan, The Netherlands, United Kingdom (UK) and USA). Next, the results of the survey in France and the Netherlands are reported. Finally, an overview is given of

[i] "Geriatric resource nurses are trained nurses with special experience in the care for older persons, who can function as unit-based expert geriatric nurses on nongeriatric units and serve as unit role models. They can educate nursing staff working on nongeriatric units about core and common geriatric problems." [57]

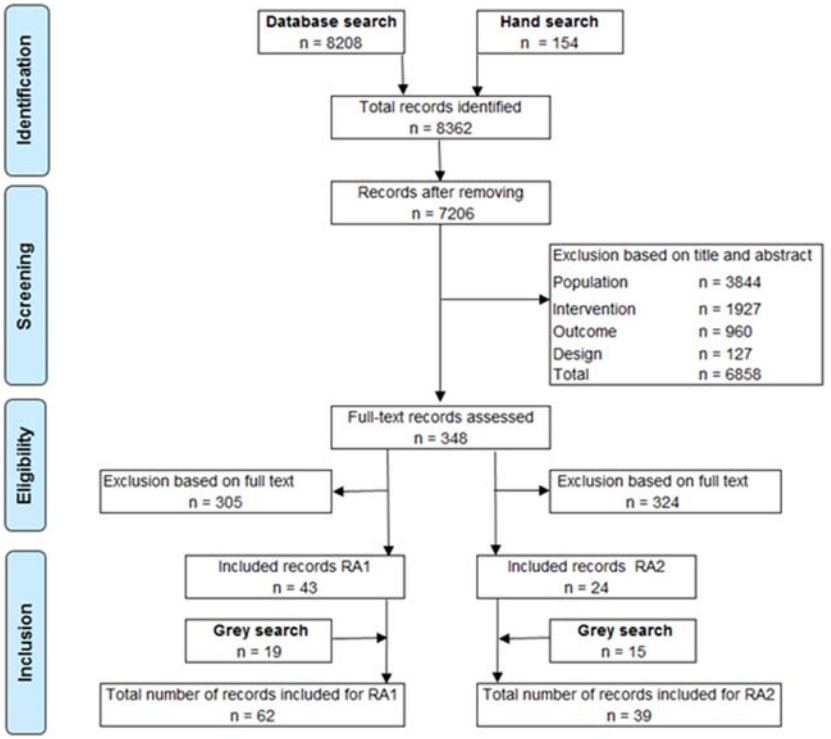
the semi-structured interviews with four health care professionals and researchers of the USA, all experts in the field of geriatric care models.

4.3.1 Database and hand search

Identification and selection of relevant papers

After removal of duplicates (n = 1 156), the database and hand search resulted in 7 206 potentially relevant papers regarding the international context of IGCTs and/or quality criteria for the evaluation of IGCTs (chapter 4 and 5). An evaluation of papers based on their title and abstract resulted in the exclusion of 6 858 papers. An additional 305 papers were excluded for chapter 4 (RA1) after full-text evaluation. Four papers were excluded because their full text was not available. Of the 23 descriptive and experimental studies conducted in the ED setting, four were excluded for chapter 4 because the intervention was monodisciplinary (i.e. nurse only) [59-62], six focused on patients expected to be discharged home and not on hospitalized patients [63-68], four were disease/problem specific (i.e. falls or pyschiatric problems only) [69-72], four included educational interventions for ED healthcare workers [73-76] and two focused on patient screening and triage only [77, 78]. Moreover, three papers described multidisciplinary IGCT interventions at the ED for patients expected to be hospitalized, but were excluded because the intervention was solely conducted on the ED without inhospital follow-up [79-81]. The database and hand search resulted in the inclusion of 43 papers for chapter 4, of which 15 were retrieved through the database search [82-96] and 28 through hand searching.[97-124] (Figure 5). Results of the study identification and selection process for chapter 5 (RA 2) are provided in the respective chapter of the report.

Figure 5 – Flowchart of the study identification and selection



Summary and report of results from database and hand search

- Study characteristics. The 43 papers reported on 24 distinct IGCT services (Table 12) in seven different countries[82-124]:
  - fourteen in the USA[98-115, 119-121];
  - three in France[83, 86, 116-118, 122, 124];
  - two in both Canada [98, 100, 101] and the UK[85, 89];
  - one in Germany[97], Taiwan[91-95, 123] and the Netherlands[84].

  All studies published before 2002 were conducted in the USA (n = 10 IGCTs)[87, 99, 102-115, 119-121] and Canada (n = 2 IGCTs)[98, 100, 101]. This is in line with information retrieved through contacts with international colleagues, indicating that the majority of initial studies on the development, operationalisation and effectiveness of IGCT services have been conducted in the USA between 1975 and 1996, but that the care model is currently no longer widespread implemented in this country. The remaining IGCTs (n = 12) were all described in more recent papers published between 2005 and 2013, and mostly (n = 7) originated from European countries (except for four teams from the USA[82, 87, 88, 90] and one from Taiwan [91-95, 123]). Besides the papers regarding the three IGCTs in France [83, 86, 116-118, 122, 124], all other studies were published in English.

  A variety of study designs were included but the majority of the IGCTs (n = 10) were discussed in descriptive studies only.[83, 85-90, 110, 116-118, 121, 122, 124] Seven IGCTs were studied using randomized[91-95, 106, 123] or nonrandomized[82, 96, 98, 100, 112] controlled trials, while three IGCTs were described using a combination of a descriptive and an experimental design[99, 102, 105, 107-109, 113, 114, 119, 120]. One IGCT was studied using a pre-post intervention design.[111] Studies from France and the UK were solely descriptive in nature. The mean age of patients seen by the IGCT ranged from 75.7 years to 85.6. (Table 12)

Table 12 – Characteristics of included studies

Country	Study	Region, city	Study period	Year of IGCT establishment	Study design	Mean age (SD) in years
Canada	Gayton et al. (1987) [98]	Quebec region, Montreal	1 September 1982-31 July 1984	-	Single centre nRCT	IG: 78.7 (6.5) CG: 78.3 (6.7)
	Hogan et al. (1987, 1990) [100, 101]	Atlantic region, Halifax	1 August 1984-1 November 1984 + 1 April 1985-1 September 1985	-	Single centre RCT + nRCT	IG: 83.0 (5.8) CG: 83.5 (5.9)
France	Bloch et al. (2007) [83]	Île-de-France, Paris	-	2005	Descriptive study	-
	Cudennec et al. (2006, 2007) [86, 118]	Île-de-France, Paris	-	2004	Descriptive study	2006: 85.0 (7.5) 2007: 83.6 (7.2)
	Couturier (2008, 2009), Morin (2012), Steenpass (2012) [116, 117, 122, 124]	Rhône-Alpes, Grenoble	-	1997	Descriptive study	85.6
Germany	Kircher et al. (2007) [97]	5 hospitals	1 July 1997-1 December 2001	-	Multi centre RCT	IG: 78.0 (6.9) CG: 78.4 (6.9)
Taiwan	Shyu et al. (2005, 2008, 2010, 2013a, 2013b), Tseng et al. (2012) [91-95, 123]	Taipei, Keelung	1 September 2001-1 November 2004 + 1 September 2005-1 July 2010	-	Single centre RCT	IG: 77.4 (8.2) CG: 78.9 (7.3)
The Netherlands	Buurman et al. (2010) [84]	Noord-Holland, Amsterdam & Flevoland, Almere	1 June 2010-31 May 2013	-	Multi center RCT	-
UK	Clift et al. (2012) [85]	South East, Southampton	-	2003	Descriptive study	-
	Harvey et al. (2009) [89]	London, London	-	2006	Descriptive study	-
USA	Allen et al. (1986), Becker et al. (1987), Cohen et al. (1992), Saltz et al. (1988), Mc Vey et al. (1989) [99, 102, 105, 113, 114]	North Carolina, Durham	November 1983-December 1984	-	Single centre RCT + descriptive study with subsample of RCT cohort	IG: 80.9 (5.8) CG: 82.0 (5.8)
	Arbaje et al. (2010) [82]	Maryland, Baltimore	1 January 2007-15 December 2007	-	Single-centre nRCT	IG 79.7 (0.3) CG: 79.1 (0.3)
	Barker et al. (1985) [111]	New York, New York	1 January 1982-1 June 1982	1982	Pre-post intervention study	-
	Blumenfield et al. (1982) [110]	New York, New York	-	-	Descriptive study	-
	Borok et al. (1994), Reuben et al. (1995, 1996) [103, 104, 115]	California, 6 hospitals of Southern California Kaiser Permanente Health Maintenance Organisation	1 March 1991- 1 March 1994		Multi centre RCT	IG: 77.6 CG: 76.7
	Campion et al. (1983) [112]	Massachusetts	1 January 1980-31 March 1980	-	Single centre nRCT	IG: 81.9 CG1: 81.7; CG2:82.3
	Dellasega et al. (2001) [87]	Pennsylvania, Allentown	-	-	Descriptive study	79.5 (5.4)
	Fallon et al. (2006) [88]	Ohio, Akron & Cleveland	-	-	Descriptive study	77.7
	Inouye et al. (1993a, 1993b) [119, 120]	Connecticut, New Haven	9 June 1990- 31 July 1991	-	Descriptive study + single centre nRCT	78.9 (6.4)

Winograd et al. (1987, 1988, 1993) [107-109]	California, San Francisco	1 October 1985-1 October 1989	1981+1984	Descriptive study + single centre RCT	IG: 75.7 (9.0) CG: 76.6 (9.7)
Miracle et al. (1992) [121]	Kentucky, Louisville	-	1986	Descriptive study	-
Sennour et al. (2009) [90]	Indiana, Indianapolis	-	2004	Descriptive study	81
Thomas et al. (1993) [106]	Mississippi, Hattiesburg	-	-	Single centre RCT	IG: 76 (5.4) CG: 77 (5.4)
Tucker et al. (2006) [96]	Georgia, Atlanta	-	-	Single centre nRCT	IG: 82 (12.7) CG: 81.2 (6.9)

- data not available; RCT: randomized controlled trial; nRCT: non-randomized controlled trial; SD: standard deviation; IG: intervention group; CG: control group

- Composition of IGCTs. Except for two IGCTs from the UK and Taiwan[85, 91-95, 123] with only two represented disciplines, all other teams (92%, n = 22) consisted out of three or more disciplines of healthcare workers. Older (before 1999; n = 6)[98, 100, 101, 106, 112, 119-121] and more recently established IGCTs (≥1999; n = 3)[86, 88, 90, 118] from Canada, France and the USA were the most multidisciplinary in nature, with the inclusion of at least five different disciplines (Table 13):
  - *Physicians and nurses* were indicated as core members in the majority of the 24 included teams (92%, n = 22 teams and 100%, n = 24 teams respectively).
  - The inclusion of *occupational- and physiotherapists* as team members was only mentioned in a limited number of studies, with a representation as a core member (29%, n = 7 teams for both disciplines)[83, 84, 86, 89, 98, 100, 106, 112, 118, 121], an availability on call (n = 1 and n = 3 teams, respectively)[82, 90, 119, 120] or without aclearly specified type of availability (8%, n = 2 teams for both disciplines)[88, 96].
  - *Social workers* were core team members in 63% (n = 15) of the cases, and were available on call or had a not clearly specified type of availability in a minority of teams (n = 3 and n = 2, respectively).[82, 88, 90, 96, 119, 120]
  - *Dieticians* were stated as members of about 38% of teams (n = 9) and were represented as core members in two-third (67%) of these cases (n = 6 [84, 87, 100, 101, 106, 112, 121]).
  - *Pharmacists* were not represented on a regular basis, and only in teams from the USA (25%, n = 6 teams).[87, 90, 96, 106, 119-121]
  - *Other disciplines*, such as a secretary, care coordinator, discharge planner, speech therapist and a representative from pastoral care (n = 2 teams for each discipline), or a gerontopsychiatrist, psychologist, recreational therapist and wound care specialist (n = 1 team for each discipline) were not stated as team members on regular basis (Table 13).

Data regarding *team size* were only available for less than half of all IGCTs (46%, n = 11).[82-86, 90, 98, 106-109, 116-120, 122, 124] Most of these IGCTs (n = 7) reported the head count of their physicians and nurses, which varied from 1 to 4 members per discipline.[82, 84, 86, 98, 106-109, 118-120] Only five IGCTs provided information on their total team size expressed in full-time equivalents (FTE)[83, 85, 86, 90, 116-118, 122, 124], which varied from 3 to 5 FTE. (Table 13)

Nineteen IGCTs (79%) provided information on the *caseload* of their team. However, a variety of caseload figures was reported in the studies (e.g. number of patients per month or per 1- to 4-year period), hampering their comparison (Table 13). To enhance comparability of findings between IGCTs, all caseload figures were converted into estimates of caseload per year if not reported as such in the included studies. (Table 13, figures in italics) For interventional studies,[88, 91-97, 99-102, 105, 106, 108, 109, 111-114, 119, 120, 123] the sample sizes for intervention groups varied considerably between 114[88] and 732[111] participants (calculation of the annual caseload). The caseload in descriptive studies on IGCTs [83, 85, 86, 89, 90, 116-118, 121, 122, 124] ranged between 25 and 3900 patients per year. With only 5 IGCTs reporting figures on the total number of FTE no relation could be found between the team size expressed in FTE and the annual caseload of the IGCTs.

The majority of IGCTs (n = 20, 83%) reported on the *educational requirements to function as an IGCT nurse*. About 79% of the teams (n = 19) required their nurse to have completed training in geriatrics.[82, 84-96, 99, 102-110, 112-124] In IGCTs from the USA, the latter requirement was often (71%, n = 10 teams) combined with the requisite of being licensed as an advanced practice nurse (APN) in geriatrics (e.g. a clinical nurse specialist (CNS) or geriatric nurse practitioner (GNP)) . Only two IGCTs from other countries (UK and the Netherlands)[84, 85] required anAPN educated nurse. (Table 13) In almost all teams, the physicians were trained as *geriatricians*, except for two teams which had no geriatrician, nor a physician as part of the IGCT.[85, 96] Teams with more than one physician (n = 4), consisted solely of geriatricians (n = 3),[86, 98, 118-120] except for one study were the geriatrician was supplemented with a geriatric medicine fellowship student and an internal medicine physician.[107-109]

Table 13 – Composition of IGCTs

Country	Study	Team composition								Team size		Caseload[3]	Educational requirements for IGCT nurses
		Geriatrician	Nurse	Occupational therapist	Physiotherapist	Social worker	Pharmacist	Dietician	Other disciplines	Head count	FTE		
Canada	Gayton et al. (1987) [98]	++	++	++	++	?				P: 2; N: 1; OT: 1; PT: 1	-	IG: n = 222 / 23 months) *N ≈ 116 / year*	
	Hogan et al. (1987, 1990)[1] [100, 101]	++	++	++	++	++		++	Pastoral care ++	-	-	IG: n = 57 (4 months) IG: n = 66 (5 months) *N ≈ 158 - 171 / year*	
France	Bloch et al. (2007) [83]	++	++	++		++				-	G: 1.0, N: 0.5, OT: 0.5; SW: 1.0 Total: 3.0	N = ±1800 / 24 months *N ≈ 900 / year*	
	Cudennec et al. (2006, 2007) [86, 118]	++	++	++		++			Secretary ++	P: 2; N: 1	G: 1.0; N: 1.0; OT: 0.5; SW: 0.5; other: 0.5 Total: 3.5	N = 1000 / 12 months (2006) N = 80-90 / month (2007) *N ≈ 960-1080 / year*	Geriatric nurse
	Couturier (2008, 2009), Morin (2012), Steenpass (2012) [116, 117, 122, 124]	++	++			++			Secretary ++	-	G: 1.5 Total: 4	N = 151 / 4 months *N ≈ 453 / year*	Geriatric nurse
Germany	Kircher et al. (2007) [97]	++	++			++				-	-	IG: n = 175 / 42 months *N ≈ 50 / year*	
Taiwan	Shyu et al. (2005, 2008, 2010, 2013a, 2013b), Tseng et al. (2012) [91-95, 123]	++	++							-	-	IG: n = 80 / 38 months *N ≈ 25 / year*	Geriatric nurse
The Netherlands	Buurman et al. (2010) [84]	++	++		++			++		P: 1; N: 2	-	-	CNS + registered nurse without geriatric training
UK	Clift et al. (2012) [85]		++			++			Therapists (not specified) ++	-	Total: 5.0	N = 55-75 / week *N ≈ 2860-3900 / year*	CNS
	Harvey et al. (2009) [89]	++	++	++	++					-	G: 0.5; N: 1.0; OT: 0.5; PT: 0.5 Total: 2.5	N = 150-170 / month *N ≈ 1800-2040 / year*	Geriatric nurse

Country	Study	Team composition								Team size		Caseload[3]	Educational requirements for IGCT nurses
		Geriatrician	Nurse	Occupational therapist	Physiotherapist	Social worker	Pharmacist	Dietician	Other disciplines	Head count	FTE		
USA	Allen et al. (1986), Becker et al. (1987), Cohen et al. (1992), Saltz et al. (1988), Mc Vey et al. (1989) [99, 102, 105, 113, 114]	++	++			++			Care coordinator +	-	-	IG: n = 93 / 12 months *N ≈ 93 / year*	CNS
	Arbaje et al. (2010) [82]	++	++		+	+				G: 1; N: 1	-	N = 5 / week *IG: 216 / 12 months* *N ≈ 216 - 260 / year*	GNP
	Barker et al. (1985) [111]	++	++			++				-	-	IG: n = 366 / 6 months *N ≈ 732 / year*	n/a
	Blumenfield et al. (1982) [110]	++	++			++				-	-	-	GNP
	Borok et al. (1994), Reuben et al. (1995, 1996)	++	++			++				-	-	IG: 1337 / 36 months *N ≈ 446 / year*	GNP
	Campion et al. (1983) [112]	++	++	++	++	++		++	Geronto-psychiatrist ++ speech therapist ++	-	-	IG: n = 46 / 3 months *N ≈ 184 / year*	Geriatric nurse; discharge planning nurse
	Dellasega et al. (2001) [87]	++	++			++	++	++		-	-	IG: n = 105 / - months	CNS with Master degree
	Fallon et al. (2006) [88]	++	++	?	?	?				-	-	IG: n = 114 / 12 months *N ≈ 114 / year*	Advance practice nurse in geriatrics
	Inouye et al. (1993a, 1993b)	++	++	+	+	+	+	+	Care coordinator +	G: 2; N: 1	-	IG: n = 244 / 12 months	CNS with Master degree
	Winograd et al. (1987, 1988, 1993)[2]	++	++			++		+	Psychologist? geriatric medicine fellow ?, internal medicine physician ?	G: 3-4; N: 1; SW: 1	-	N: 15 / month *N ≈ 180 / year*	CNS
	Miracle et al. (1992) [121]	++	++	++	++	++	++	++		-	-	N = 358 / 36 months *N ≈ 119 / year*	CNS

Country	Study	Team composition								Team size		Caseload[3]	Educational requirements for IGCT nurses
		Geriatrician	Nurse	Occupational therapist	Physiotherapist	Social worker	Pharmacist	Dietician	Other disciplines	Head count	FTE		
	Sennour et al. (2009) [90]	++	++		+	+	+		Care coordinator +	-	P: 0.65; N: 1.0; Total: -	N = 1538 / 48 months *N ≈ 385 / year*	GNP
	Thomas et al. (1993) [106]	++	++		++	++	++	++		G: 1; N: 2; PT: 1; SW: 1; Ph: 1	-	IG: n = 68 / - months	Geriatric nurse + home health nurse
	Tucker et al. (2006) [96]		++	?	?		?	?	Speech therapist? wound care specialist ? Pastoral care? Care coordinator?	-	-	IG: n = 141 / - months	CNS
Summary statistics		92%	100 %	33%	42 %	75 %	21 %	33%	42%	2 - 6	3.0 - 5.0	Annual range Descriptive studies : 25 – 3900 Interventional studies: 114 - 732	

- Data not available; FTE: full-time equivalent; ++ = core member of IGCT; + = discipline available on call; ? = type of availability not clearly indicated
G = geriatrician; N = nurse; OT = occupational therapist; PT = physiotherapist; Ph = pharmacist; Ps = psychologist; CNS=clinical nurse specialist in geriatrics/gerontology; GNP = geriatric nurse practitioner
[1] Occupational therapist, social worker, dietician and pastoral care were added to the IGCT in Hogan et al. (1990)
[2] Nurse was added to the IGCT in Winograd et al. (1988)
[3] Reporting raw data from included studies and estimates of caseload per year (provided in italics if not reported as such as raw data)
Summary statistics indicate a) the % of IGCT in which the respective discipline is represented as a core member, b) ranges for team size and caseload measures

- Operationalisation of IGCTs.
  - *Type of units.* A majority of IGCTs (75%, n = 18) intervened at *medical units*,[82-86, 89, 90, 96-105, 107-110, 112-120, 122, 124] whereas only a minority of teams provided consultations *at surgical units* (29%, n = 7),[83, 85, 86, 88, 99, 102, 105, 107-109, 113, 114, 116-118, 122, 124] the emergency department (17%, n = 4),[83, 85, 86, 116-118, 122, 124] intensive care units (12.5%, n = 3)[83, 86, 88, 118] or psychiatry units (4%, n = 1)[97]. The reporting on the IGCT intervention units was (in part) ambiguous for seven teams, since intervention units were either not or only vaguely described.[90-95, 99-106, 113-115, 121, 123] IGCTs from France[83, 86, 116-118, 122, 124] and one team from the UK[85] had the broadest intervention scope (e.g. consultations were provided at three or more different types of hospital units). (Table 14)
  - *Targeted patient groups.* In 16 IGCTs (67%), interventions were initiated only in patients being 60,[91-95, 123] 65,[84, 88, 97, 107-109, 115] 70,[82, 87, 96, 106, 111, 119, 120] or 75[89, 99-102, 105, 112-114] years of age or older. Patients in a terminal stage of illness[84, 87, 91-96, 103, 104, 106, 111, 115, 123] and admitted from a nursing home[84, 87, 91-96, 103, 104, 115, 123] were excluded from screening by respectively 7 and 5 of the IGCTs. A minimum expected LOS, as estimated at the time of hospital admission, was formulated by four teams[84, 96, 97, 107-109] and varied between 48 hours[84, 96] and 8 days[97].
  - *Use of a formal screening process to detect high-risk patients.* In addition to the aforementioned in- an exclusion criteria formulated in the different studies, a formal screening process for the detection and selection of patients at risk for functional decline was only scarcely used (n = 7; 29%) by teams from different countries (Canada, Germany, the Netherlands, UK, USA).[84, 89, 97, 100, 101, 107-109, 111, 115] The timeframe for screening was indicated for five IGCTs, i.e. screening was to be performed within 24 hours,[89] 48 hours,[84, 100, 101] 72 hours[103, 104, 115] or within 96 hours[107-109] after hospital admission. Of importance, only one study from the Netherlands[84] indicated the use of an international recognized screening tool (i.e. the Identification of Seniors At Risk – Hospitalized Patients tool or ISAR-HP) [125]. Other teams used self-defined sets of criteria, such as the patient's age and presence of a variety of geriatric syndromes. (Table 14) The discipline responsible for screening was either an IGCT member,[84, 89, 100, 101, 111] a research project coordinator,[107-109] or was not specified[103, 104, 115]. Remaining IGCTs did not use formal screening procedures. Instead, case-finding was performed through contact between the care team of the unit where the patient is hospitalized (CTU) and the IGCT, including methods such as informal contact, bedside rounds, IGCT members attending CTU team meetings, chart review and intervention on request by the CTU.[83, 85, 86, 90, 98, 110, 116-118, 121, 122, 124] (Table 14)
  - *IGCT team meetings.* The organisation of IGCT team meetings was specified by 63% of IGCTs (n = 15),[84, 87, 89, 96-105, 107-110, 112-117, 119-122, 124] with slightly more than half of these teams (53%, n = 8) having a daily meeting.[87, 89, 96, 98, 100, 101, 103, 104, 115-117, 121, 122, 124] One IGCT from the UK[89] and four teams from the USA[87, 99, 102, 105, 110, 113, 114, 121] had more than one type of IGCT meeting, mostly to differentiate between the discussion of cases after initial patient assessment and during follow-up. A limited number of teams, all originating from the USA (17%, n = 4),[87, 110, 112, 119, 120] purposively invited members of the CTU or geriatric resource nurses (GRNs) to participate in the IGCT team meetings. (Table 14)

Table 14 – Operationalisation of IGCTs

Country	Study	Intervention units	Study inclusion criteria	Detection of high-risk patients		IGCT meetings	
				Performance of screening, timeframe and screening criteria used	Other type of case finding	Frequency	Content
Canada	Gayton et al. (1987) [98]	Medical units	-	No	Informal contact; IGCT & CTU Weekly bedside rounds; IGCT & CTU	5x/week	Discussion of assessment of new patients + follow-up of previously assessed patients
	Hogan et al. (1987, 1990) [100, 101]	Medical units, ED?, no ICU	Aged ≥ 75 years & admitted to study unit on emergency basis	By nurse, ≤ 48 hours after admission *Hogan et al. (1987):* ≥ 1 of following criteria: confusional state, impaired mobility, falls not associated with loss of consciousness, urinary incontinence, polypharmacy, nursing home admission, previous hospital admission ≤ 3 months *Hogan et al. (1990):* category 3-5: self-developed instrument (7 categories of risk for functional decline), items: mobility/ADL activities, urinary/faecal incontinence, mental status	No	5x/week	Bedside rounds
France	Bloch et al. (2007) [83]	Medical and surgical units, ED, ICU	-	No	Request by CTU Attendance of daily ED meetings; by IGCT physician	-	-
	Cudennec et al. (2006, 2007) [86, 118]	Medical and surgical units, ED, ICU	-	No	Request by CTU	-	-
	Couturier (2008, 2009), Morin (2012), Steenpass (2012) [116, 117, 122, 124]	Medical and surgical units, ED	-	No	Request by CTU, further selection by IGCT nurse and physician	5x/week	Discussion of assessment of new patients
Germany	Kircher et al. (2007) [97]	Medical and psychiatry units	Aged ≥ 65 years, expected length of stay ≥ 8 days	By IGCT physician Functional impairment (≥2 criteria proposed by Lachs et al. 1990), social problems	No	≥ 1x/week	Discussion of assessment for new patients + follow-up of previously assessed patients

Country	Study	Intervention units	Study inclusion criteria	Detection of high-risk patients		IGCT meetings	
				Performance of screening, timeframe and screening criteria used	Other type of case finding	Frequency	Content
Taiwan	Shyu et al. (2005, 2008, 2010, 2013a, 2013b), Tseng et al. (2012) [91-95, 123]	-	Aged ≥ 60 years, admission with accidental first-time single-side hip fracture, receiving hip arthroplasty or internal fixation, ability to perform full range of motion, prefracture Barthel-index score > 70, living in northern Taiwan, MMSE ≥ 10, no nursing home admission, not terminal stage of illness	No	No	-	-
The Netherlands	Buurman et al. (2010) [84]	Medical units	Aged ≥ 65 years, unplanned admission, expected length of stay ≥ 48 hours, no terminal stage of illness, no transfer to other hospital units, no admission from other hospital (department) or nursing home	By nurse, ≤ 48 hours of admission • *General patients* ≥ 2 on ISAR-HP: regular need for IADL assistance, use of walking device, assistance for travelling, education after age of 14 • *Very ill or cognitive impaired patients*: delirium, malnutrition, ADL functioning, mobility, fall risk	No	-	Discussion of assessment of new patients
UK	Clift et al. (2012) [85]	Medical and surgical units, ED?[1]	-	No	Request by CTU	-	-
	Harvey et al. (2009) [89]	Medical units	Aged ≥ 75 years & admitted to study unit	By entire IGCT, ≤ 24 hours of admission (except in the weekends) Self-developed instrument, items: admission reason, readmission history, falls, polypharmacy, dementia/delirium/depression, pressure ulcers, chronic pain, social problems, mobility impairment, functional dependence, urinary	No	5x/week	Discussion of assessment for new patients + follow-up of previously assessed patients + decision on ambiguous screening results

Country	Study	Intervention units	Study inclusion criteria	Detection of high-risk patients		IGCT meetings	
				Performance of screening, timeframe and screening criteria used	Other type of case finding	Frequency	Content
				incontinence, constipation/ faecal incontinence, poor nutrition, unmet social needs, visual or hearing impairment			
USA	Allen et al. (1986), Becker et al. (1987), Cohen et al. (1992), Saltz et al. (1988), Mc Vey et al. (1989) [99, 102, 105, 113, 114]	Medical and surgical units, ED?	Aged ≥ 75 years, admitted to study unit	No	No	2x/week	Discussion of assessment of new patients + follow-up of previously assessed patients
	Arbaje et al. (2010) [82]	Medical units	Aged ≥ 70 years, admitted to study unit	No	No	-	-
	Barker et al. (1985) [111]	-	Aged ≥ 70 years & admitted to study unit (except terminal stage of illness or elective surgical admission	By IGCT member ≥ 2 of following criteria: living alone, aged ≥ 80 years, low income, cognitive impairment, significant physical impairment	No	-	-
	Blumenfield et al. (1982) [110]	Medical units	-	No	Request by CTU Chart review, bedside rounds, assisting CTU in patient identification; by IGCT	1x/week	Bedside rounds to discuss the assessment of new patients. Discuss complex clinical/ethical dilemmas with CTU.
	Borok et al. (1994), Reuben et al. (1995, 1996) [103, 104, 115]	Medical units, ED?	Aged ≥ 65 years, not admitted to ICU/ coronary care*, not in-surgery*, no terminal stage of illness, no nursing home admission	24-72 hours after admission Step 1: admission list review (not specified) Step 2: ≥ 1 of following criteria: stroke, immobility, ADL impairment, incontinence, confusion or dementia, prolonged bed rest, falls within past 3 months, depression, social problems, unplanned admission ≤ 3 months after previous admission, new fracture, aged ≥ 80 years	No	5x/week	Discussion of assessment for new patients + follow-up of previously assessed patients

Country	Study	Intervention units	Study inclusion criteria	Detection of high-risk patients		IGCT meetings	
				Performance of screening, timeframe and screening criteria used	Other type of case finding	Frequency	Content
	Campion et al. (1983) [112]	Medical units	Aged ≥ 75 years, admitted to study unit	No	No	-	After initial assessment & with CTU nurse & social worker (A, B)
	Dellasega et al. (2001) [87]	-	Aged ≥ 70 years, admitted to study unit for acute medical condition, scheduled for home discharge, no terminal stage of illness, not totally ADL independent	No	No	5x/week	Discussion of assessment of new patients with CTU physician During follow-up & with CTU P (B)
	Fallon et al. (2006) [88]	Surgical units, ICU	Aged ≥ 65 years, admitted to study unit, no burn patient	No	No	-	-
	Inouye et al. (1993a, 1993b) [119, 120]	Medical units	Aged ≥ 70 years, admitted to study unit	No	No	2x/week	Bedside rounds & with GRNs + CTU nurse (Discussion of assessment of new patients and GRN education and support)
	Winograd et al. (1987, 1988, 1993)[1] [107-109]	Medical and surgical units	Aged ≥ 65 years & admitted to study unit Exclusion if predicted hospital stay ≤ 96 hours, place of residence ≥ 2 hours from study hospital, deceased before screening, female gender, hospitalized at ICU	By project coordinator + discussion with IGCT (if needed), ≤ 96 hours after admission ≥ 1 of following criteria: ADL impairment, incontinence, confusion, chronic and disabling illness, immobility, malnutrition, falls, depression, socio-economic/family problems, sensory impairment, cerebrovascular accident, prolonged bed rest, restraints, pressure sore, polypharmacy	No	-	Discussion of assessment of new patients
	Miracle et al. (1992) [121]	-	-	No	Referral by CTU physician (not specified)	5x/week	Discussion of assessment of new patients + follow-up of previously assessed patients. Informal contacts of IGCT to discuss complex patients

Country	Study	Intervention units	Study inclusion criteria	Detection of high-risk patients		IGCT meetings	
				Performance of screening, timeframe and screening criteria used	Other type of case finding	Frequency	Content
	Sennour et al. (2009) [90]	Medical units, surgical units?	-	No	• Daily meetings to identify patients at risk for functional decline; by IGCT & CTU physician • Identification outside meetings; by IGCT • Request by CTU	-	-
	Thomas et al. (1993) [106]	-, no ICU	Aged ≥ 70 years, admitted to study unit, no admission to ICU, no terminal stage of illness, no renal hemodialysis, no place of residence > 50 miles from study hospital	No	No	-	-
	Tucker et al. (2006) [96]	Medical units	Aged ≥ 70 years, admitted to study unit with medical diagnosis, predicted length of hospital stay ≥ 48 hours, Medicare insurance available, no terminal stage of illness, no admission from nursing home	No	No	5/week	Bedside rounds. Discussion of assessment of new patients + follow-up of previously assessed patients

- data not available; n/ap: not applicable; CTU: care team of unit where patient is hospitalized; ED: emergency department, ICU: intensive care units,? = not clearly indicated
[1] Change of focus on solely ED 7 years after IGCT establishment + Screening procedure not used in Winograd et al. (1987), added in Winograd et al. (1988)
[2] Intervention units: reporting total percentage of IGCTs providing consultation at specific type of unit;,ED = emergency department, ICU = intensive care unit,. Screening: reporting total percentage of IGCTs performing a formal screening process and range of timeframe for screening (hours after hospital admission) across IGCTs. Team meetings: reporting range of meeting frequency (times per week) across studies

- Patient assessment by IGCTs. More than half of the IGCTs (58%, n = 14) evaluated all four main domains of a CGA (medical, functional, psychological, social) during baseline patient assessment.[82, 83, 85-88, 91-95, 97, 99, 102-106, 111, 113-118, 121-124] (Appendix 11, Table 15) However, almost all of these teams (92.9%; n = 13) only performed a very brief assessment (e.g. 1-2 items) for two or more domains.[82, 83, 85-88, 91-95, 97, 99, 102-106, 111, 113-115, 118, 121, 123] Furthermore, no or only very concise information about patient assessment was provided for 42% of the teams (n = 10).[84, 89, 90, 96, 98, 100, 101, 107-110, 112, 119, 120]
  - *Medical* items most often assessed by the IGCTs included medication review (63%, n = 15 teams), acute medical problems (42%, n = 10 teams), medical history (42%, n = 10 teams), nutritional status (21%, n = 5 teams) and the performance of a physical examination (29%, n = 7 teams).
  - For the *functional domain*, the assessment of activities of daily living was most frequently performed (67%, n = 16 teams), followed by an evaluation of mobility and balance (33%, n = 8 teams), fall risk and/or history (29%, n = 7 teams), and hearing and vision (25%, n = 6 teams).
  - A *psychological evaluation* almost always included a cognitive assessment (79%, n = 19 teams), and sometimes screening for depression (50%, n = 12 teams) or delirium (25%, n = 6 teams).
  - Regarding *social aspects*, care issues and needs (both regarding formal and informal care) were most often assessed (54%, n = 13 teams).

  The use of validated, internationally recognized assessment instruments was stated by 63% of teams (n = 15),[84, 86-88, 90, 96, 97, 103, 104, 106-109, 111, 112, 115-122, 124] mostly for the functional (54%, n = 13 teams) and psychological domain (54%, n = 13 teams). Applied instruments included the Basic and Instrumental Activities of Daily Living scale, Confusion Assessment Method and Geriatric Depression Scale. (Appendix 11, Table 15) Furthermore, the disciplines responsible for performing the assessment were specified for 71% of IGCTs (n = 17).[82-84, 86-88, 90-96, 99-105, 107-110, 113-124] IGCT nurses (65%, n = 11 teams) and physicians (53%, n = 9 teams) were most often involved. Providing patient assessment was a shared responsibility of all IGCT members in 5 teams[87, 100, 101, 110, 119-121], and two IGCTs deliberately encouraged the contribution of the CTU or GRNs.[96, 119, 120] (Appendix 11, Table 15)
- Recommendations by IGCTs. Recommendations were often communicated to the CTU both in written (added to patient's file) and verbally (direct or telephone contact between IGCT and CTU) (33%, n = 8 teams teams)[82, 86, 88, 90, 98, 99, 102, 105, 107-109, 112-114, 118] or in written only (29%, n = 7 teams)[83, 87, 96, 97, 103, 104, 106, 111, 115]. Only a minority of teams (17%, n = 4 teams) used electronic communication (e-mail)[86, 103, 104, 106, 115-118, 122, 124], while communication methods were not specified for seven IGCTs [84, 85, 89, 91-95, 100, 101, 119-121, 123]. Communication to the patient and relative(s) (n = 3)[82, 84, 98] or to professional caregivers in primary care (25%, n = 6 teams)[116, 117, 122, 124] was only performed to a limited extend. Only six IGCTs from France and the USA provided information on the adherence to their recommendations by the CTU.[87, 99, 102, 105, 107-109, 111, 113, 114, 116, 117, 119, 120, 122, 124] Reported mean adherence rates of individual studies were ≥ 65%, but their ranges varied considerably (between 22% and 100%). Lastly, less than half of all IGCTs (42%, n = 10) indicated having a hybrid role (both advisory and implementation), meaning that IGCT members also directly implemented part of their recommendations in the care for consulted patients.[82, 89-98, 103, 104, 107-110, 115, 123] No information on team role(s) was provided by nine teams.[83-85, 87, 88, 100, 101, 106, 121] (Appendix 11, Table 15)
- Other aspects of IGCTs operationalisation.
  - *In-hospital follow-up.* Besides baseline patient assessments, more than half of all IGCTs (58%, n = 14) also provided in-hospital follow-up of patients,[82, 90-95, 98-117, 121-124] with the majority of these being IGCTs from Canada (8%, n = 2 teams) and the USA (42%, n = 10 teams). Their follow-up mostly consisted of evaluating the implementation rate of recommendations made after baseline assessment (25%, n = 6 teams)[103, 104, 106-111, 115, 121] and/or patient re-assessment (25%, n = 6 teams)[91-95, 99, 102-105, 107-110, 113-115, 121, 123].
  - *Collaboration with professional caregivers in primary care* was systematically performed by 12 IGCTs (50% of IGCTs), including teams from almost all reported countries (except for Canada). This collaboration often included telephone follow-up of patients and relatives (25%, n = 6 teams)[82, 91-97, 103, 104, 115, 121, 123] and/or communication on the assessment and recommendations of the

IGCT (21%, n = 5 teams)[82, 84, 86, 97, 116-118, 122, 124] .Care coordination (13%, n = 3 teams),[84, 91-95, 116, 117, 122-124] requesting outpatient consultations (e.g. consultation for comprehensive fall risk assessment, consultation by a specialist physician) (8%, n = 2 teams)[85, 86, 118] and home visits[96, 97] (8%, n = 2 teams) were less often performed. (Table 15)

- *Geriatric resource nurses (GRNs).* In only one case, collaboration was described between the IGCT and GRNs.[119, 120] These GRNs were nurses from non-geriatric units, selected based on their personal interest in geriatrics and willingness to function as unit-based experts and role models regarding geriatric care. Their responsibilities were broad, and included collaborating with the IGCT for patient screening, bedside rounds and education of regular staff nurses, implementing IGCT recommendations in patient care (either directly or through assisting regular staff nurses), attending training sessions in geriatrics organized by the IGCT, and facilitating communication between the IGCT and non-geriatric units.[119, 120]
- *Training and education*. Besides patient consultations, the main focus of nine IGCTs was providing informal and formal education for the CTU, patient and/or relatives.[82, 85, 86, 89, 90, 96, 99, 102, 105, 107-110, 113, 114, 118] One IGCT also participated in working parties at the hospital level.[86, 118] (Table 15)
- *Operational problems.* Half of all IGCTs (50%, n = 12 teams from France and the USA) reported operational problems, such as time constraints,[83, 90, 110, 119, 120] communication problems with the CTU,[119, 120] an unclear division of responsibilities for patient care between the IGCT and CTU[110, 112] and a lack of IGCT availability during weekends[83].
- *Financing*. Finally, data on the financing of eight (33% of) IGCTs were provided[85, 90-95, 97, 99-102, 105, 107-109, 111, 113, 114, 123], indicating that these teams relyed on (a combination of) governmental funds, hospital funds, academic funds and/or research grants. (Appendix 11)

Table 15 – Patient follow-up, collaboration with primary care and other activities of IGCTs

Country	Study	In-hospital patient follow-up	Collaboration with primary care	Other activities of IGCT
Canada	Gayton et al. (1987) [98]	By occupational therapist, physiotherapist and social worker	No	-
	Hogan et al. (1987, 1990) [100, 101]	By IGCT member, daily	No	-
France	Bloch et al. (2007) [83]	No	• Assessment data collection	-
	Cudennec et al. (2006, 2007) [86, 118]	No	• Communication on IGCT assessment and recommendations • Request for geriatric outpatient consultation	• (In)formal educational role (CTU require, nursing schools, during consultations) • Participation in hospital-level working groups
	Couturier (2008, 2009), Morin (2012), Steenpass (2012) [116, 117, 122, 124]	On request by CTU	• Communication on IGCT assessment and recommendations • Coordination and liaison by social worker	-
Germany	Kircher et al. (2007) [97]	No	• Home visit by nurse/social worker • Communication of assessment and recommendations • One-time telephone-follow-up by social worker	-
Taiwan	Shyu et al. (2005, 2008, 2010, 2013a, 2013b), Tseng et al. (2012) [91-95, 123]	By nurse, assessment at first day post-operative	• Coordination and monitoring of outpatient services after discharge • Telephone reminders for orthopaedic outpatient visits	-
The Netherlands	Buurman et al. (2010) [84]	No	• Communication of assessment and recommendations to primary care geriatric consultancy team • Elaborate post-discharge follow-up by primary care geriatric consultancy team	-
UK	Clift et al. (2012) [85]	No	• Request for comprehensive outpatient falls service consultation	(In)formal educational role
	Harvey et al. (2009) [89]	No	No	Informal educational role
USA	Allen et al. (1986), Becker et al. (1987), Cohen et al. (1992), Saltz et al. (1988), Mc Vey et al. (1989) [99, 102, 105, 113, 114]	• Bedside rounds, 3/week • Informal contact with CTU, daily	No	Informal educational role
	Arbaje et al. (2010) [82]	By IGCT nurse	• Communication of assessment and recommendations • Post-discharge one-time telephone follow-up of patient/primary caregiver	(In)formal educational role for CTU and patient/primary caregiver
	Barker et al. (1985) [111]	• Follow-up implementation of recommendations	No	No
	Blumenfield et al. (1982) [110]	• Follow-up implementation of recommendations • Re-evaluation (if needed)	No	Formal educational role for CTU

Country	Study	In-hospital patient follow-up	Collaboration with primary care	Other activities of IGCT
	Borok et al. (1994), Reuben et al. (1995, 1996) [103, 104, 115]	• Follow-up implementation of recommendations • Re-evaluation (if needed)	• Telephone follow-up by social worker IGCT • Collaboration with discharge planners	-
	Campion et al. (1983) [112]	Yes, not specified	No	-
	Dellasega et al. (2001) [87]	No	No	-
	Fallon et al. (2006) [88]	No	No	Participation in CTU team meetings
	Inouye et al. (1993a, 1993b) [119, 120]	No	No	Formal educational role for CTU and GRNs
	Winograd et al. (1987, 1988, 1993)[1] [107-109]	By IGCT physician • Bedside rounds, daily • Formal bedside teaching rounds, 3/week	No	Informal educational role for CTU
	Miracle et al. (1992) [121]	By IGCT nurse, daily • Evaluate response to recommendations • Re-evaluation	• Post-discharge telephone follow-up (6 months)	n/a
	Sennour et al. (2009) [90]	Daily (not specified)	• Communication of assessment and recommendations	• Organisation of multidisciplinary geriatrics interest groups at hospital level • Formal educational role (curriculum in geriatric medicine)
	Thomas et al. (1993) [106]	Evaluate response to recommendations	No	-
	Tucker et al. (2006) [96]	No	• Telephone follow-up by IGCT social worker • Home visit (home discharge only) by IGCT social worker	Formal educational role (curriculum for CTU)

- data not available; CTU = care team of unit where patient is hospitalized

- Evaluation of IGCTs. Most data regarding the evaluation of IGCT services were retrieved from the 26 papers with an experimental study design. These papers reported on the effectiveness of IGCT services for a variety of in-hospital, short- and long-term outcomes. Details on these outcome-evaluations (e.g. types of outcomes, statistically significant effects) are not reported, since only the performance of a systematic review and meta-analysis such as those conducted by Stuck et al. (1993)[126], Ellis et al. (2011)[14, 17] and Deschodt et al. (2013)[22] would allow for reliable and valid conclusions on this topic. Furthermore, conducting this type of study was not an objective of the current report. Other evaluations of IGCTs (n = 8) focused on the adherence to IGCT recommendations by the care team of the unit where the patient is hospitalized (CTU). These studies indicate that adherence rates vary considerably and are dependent on several factors. More specifically, statistical significant associations were reported between adherence rates and the number of recommendations made (in favor of focusing on a limited amount of prioritized recommendations)[122] or using direct discussion of the recommendations with the CTU[113]. Other influencing factors included barriers at the hospital or unit level (such as time constraints due to inadequate staffing levels[110, 119, 120] or financing,[111] working procedures and infrastructures[86, 110, 111, 118]), attitudes of the CTU to the care for geriatric patients,[86, 96, 111, 118] and the patient's

availability of a social network (for recommendations that should be implemented after hospital discharge to the home setting)[122]. Although implementation rates varied according to their domain (e.g. medical, functional, psychological, social), only one study investigated this association and found a non-significant effect[122]. Importantly, no authors reported on the use of quality criteria/indicators or annual performance reports to evaluate their IGCT service. Although a small number of studies (n = 5)[82, 87, 90, 94, 115] indicated (future) plans to evaluate the cost-effectiveness of their IGCT intervention, no data on this topic were identified.

4.3.2 Grey literature search

Based on the database and hand search (methods see 4.2.1), Canada, France, Germany, Taiwan, the Netherlands, UK and USA were identified as countries from which studies regarding IGCTs originated. To identify additional documents reporting on IGCTs in these countries (e.g. legislation, guidelines, research reports), a grey literature search was conducted. Because of language barriers, the search in Germany and Taiwan was limited and no information could be retrieved.

This grey literature search resulted in the identification of 19 relevant grey documents (Appendix 2).[127-145] Besides two documents and a website from Canada and the UK,[127, 128, 130] the majority were guidelines or position statements from two European countries (France and the Netherlands).[131-142] Legislation regarding IGCT could only be identified for France.[143-145]

4.3.2.1 Canada

Despite a search on several websites of Canada's main professional organisations for geriatrics and gerontology, only two relevant grey documents[127, 129] and one website[128] could be identified, both originating from the province of Ontario. This province consists out of five Regional Geriatric Programs in Hamilton, Kingston, London, Ottawa, and Toronto. Apart from the geriatric assessment units, geriatric rehabilitation units, outreach teams, day hospitals, and geriatric clinics, consultation teams are one of the care models implemented for providing specialized geriatric services to all aging Canadians. In 2008, a handbook was published aiming at providing an evidence-based approach to service delivery for the older patient in specialized geriatric services, which included assessment and consultation services.[129] According to the author, there were 5786 consults by geriatricians compared to 3089 admissions to specialized geriatric units in the 19 sites of the five Regional Geriatric Programs of Ontario in 2003-2004.[129]

In 2011, a summary report on the implementation of the Senior Friendly Hospitals (SFH) framework was published jointly by the Regional Geriatric Programs of Toronto and Ontario, and the Senior Friendly Hospital (SFH) Network.[127] Development of the Canadian SFH framework started in 2010, under auspices of the Regional Geriatric Programs of Ontario. It elaborates a comprehensive, organisation-wide and evidence-based model of care delivery for older inpatients, based on the notice that a paradigm shift for hospital care is needed to adequately respond to the healthcare needs of a continuously aging and chronically ill population. The overall aim of the framework is to enable older persons to maintain optimal health and function during hospitalisation so that they can transition successfully to the next appropriate level of care.

To guide a region-wide roll-out of the SFH framework in Ontario hospitals, a mixed-methods research project was undertaken in 2010-2011 to examine the extent to which the region's hospitals at baseline already integrated structures and processes of the SFH model in daily clinical practice. The identified document reports on the findings of this project and includes recommendations for five core areas of hospital practice: 1) organisational support; 2) processes of care; 3) the emotional and behavioural environment; 4) ethics in clinical care and research; and 5) the physical environment. Thereby, it can be used as a practice guide to further establish senior friendly hospital care. A recommendation for the second domain, i.e. processes of care, encourages hospitals *"to implement inter-professional protocols across hospital departments to optimize the physical, cognitive, and psychosocial function of older patients […], including high-risk screening, prevention measures, management strategies, and monitoring/evaluation processes".*[127] However, the report did not specifically mention the IGCT care model as a possible venue to achieve this goal, nor included data indicating that hospitals in the Ontario region implemented IGCT care.

Importantly, it should be noted that the Canadian SFH framework has been introduced in an adapted version in the Netherlands. As explained below (see 4.3.2.3), this revised Dutch model has added the availability of an IGCT as a recommended component of senior friendly hospital care.

4.3.2.2 United Kingdom

One potentially relevant document was identified for the UK.[130] In 2011-2012, the Royal College of Physicians published three short toolkits for acute hospital care. The most recent toolkit included recommendations on acute medical care for frail older people. The main aims of the toolkit are twofold: (1) to provide background information on the importance of conducting a CGA for frail older patients at the earliest possible time following hospitalisation, and (2) to give an overview of care models based on a CGA process, that can potentially be integrated within acute medical services of hospitals in the UK. As part of this second aim, the toolkit repeatedly states that 'geriatric liaison services' might be a suitable CGA oriented care model[130], and that an increasing number of acute medical units within UK hospitals are being supported by 'geriatric liaison services'.[130] However, nor the toolkit itself, nor the website of the Royal College of Physicians clearly defines these liaison services. Thereby, it is uncertain whether the proposed liaison model is fully congruent with the IGCT definition applied for this KCE report. As only two studies and no best-practices of IGCT were identified through our extensive search strategy regarding IGCT implementation in the UK, it is assumed that the Royal College of Physicians toolkit and the current KCE report consider two distinct models for geriatric care in the acute hospital setting. According to the research conducted by Prof. Simon Conroy (University of Leicester, UK), geriatric liaison includes mono-disciplinary interventions conducted by geriatricians only.[146] As such, these studies and documents have been excluded from the literature search focusing on multidisciplinary interventions. Additionally, in a 2014 editorial, after comparing geriatric consultations with 'safari unit rounds', Conroy and Parker advised hospitals to adapt to the growing number of frail older people and referred to 'acute frailty units' (e.g. unit-based models) as a care model holding significant promise.[147]

4.3.2.3 The Netherlands

Description of the identified and included grey documents

Seven documents[131, 132, 134-136, 138-140] and two websites[133, 137] were identified as relevant for the Netherlands. These sources were drafted by multiple professional associations, i.e. the '*Nederlandse Verening voor Klinische Geriatrie*' (NVKG),[132-134] the '*Koninklijke Nederlandse Maatschappij tot bevordering der Geneeskunde*' (KNMG),[136] the '*Nederlandse vereniging van ziekenhuizen*' (NVZ),[131] the '*Nederlandse federatie van Universitair Medische centra*' (NFU),[131] the '*Orde van Medische specialisten*' (OMS),[131] the '*Landelijke Expertisecentrum Verpleging & Verzorging*' (LEVV),[131] the '*Verpleegkundigen & Verzorgenden Nederland*' (V&VN) [131], the *'Nederlandse Zorgauthoriteit'*[138, 139] and one coallition of senior associations,[135, 137, 140] i.e. the '*Gezamenlijke Ouderenbond'* (GO).

The National Patient Safety (VMS) program was initiated by the NVZ, NFU, OMS, LEVV and the V&VN, formulating recommendations aimed at preventing (iatrogenic) complications related to hospital admissions of frail older people.[131] Primarily, the VMS program aims to screen all patients aged 70 years and older for risk of delirium, falls, malnutrition and physical limitations and implements preventative and curative interventions averting (avoidable) functional decline.

In 2010, the KNMG published recommendations aiming to improve care for frail older people, as medical care was judged suboptimal for this population.[136] An early detection of frailty and multidisciplinary collaboration between healthcare professionals were deemed necessary to combat iatrogenic complications. A 'care pathway for frail older people' admitted to the hospital was drafted based on the following criteria:

- good transitional care;
- integrated medical diagnosis and treatment coordinated by a geriatric skilled physician (e.g. implementing an Acute Care for the Elderly (ACE) unit);
- systematic screening of patients aged 65 years or older;
- management of frail patients by at least an internal and geriatric medicine physician;
- implementing geriatric expert teams;

- 'Senior Friendly Hospital' (SFH) framework.

The NVKG developed the guideline 'Comprehensive Geriatric Assessment' (CGA), aiming to standardize the process of CGA and to consequently justify and improve its quality.[134] This was deemed important, as a uniform approach to CGA was missing, probably resulting in considerable hospital-level heterogeneity. Since these guidelines only address CGA on geriatric units and geriatric outpatient clinics, the NVKG published an addendum in 2013, focusing on the consultation and co-management model used by geriatric consultation teams.[132]

In 2012, the GO started the SFH project (2012-2015) awarding a quality label to hospitals facilitating specific care needs and wishes of older patients at the hospital and care level.[135, 137, 140] The label is based on the evaluation of 15 quality criteria.[135, 140] (See Chapter 5). To be awarded the SFH quality label, a hospital should:

- score at least 75 points (out of 100) on the criterion 'availability and commitment of the geriatric expert team';
- should meet (e.g. also scoring ≥ 75 points) at least 7 out of 12 quality criteria regarding care organisation
- should meet at least 1 out of 3 quality criteria regarding physical environment.[135]

Of the 126 hospitals in the Netherlands, 99 were evaluated. Forty-six of these (46.5%) were awarded the SFH quality label, 82 (83%) had a geriatric expert team, of which the majority (68, n = 56) of the latter scored the required 75 points or more for the geriatric expert team criterion.[137]

In-hospital care models for geriatric patients

Overview

Besides the CGA unit model,[134] several aspects of the CGA team model are regulated in the aforementioned documents. According to the NVKG the CGA team model can be implemented using three different ways:[132]

- a clinical geriatric consult provides an answer to a specific clinical question concerning a geriatric problem or co-morbidity, outside the area of expertise of the requesting physician. CGA should not be considered when a geriatric consult is requested.[132] Usually in these cases, only one specific clinical question is posed without the geriatric team providing any care recommendations or taking treatment responsibility.
- geriatric co-management encompasses a wide range of clinical investigations concerning geriatric problems and co-morbidities, outside the area of expertise of the treating physician, leading to care recommendations and/or implementation responsibility. CGA should be considered when geriatric co-management is requested.[132]
- structural co-management consists of CGA in a well-defined patient population in which the geriatric team collaborates more than once a week with the internal medical physician. Structural co-management should be considered for patients with a hip fracture aged 70 years or older.[132]

Importantly, it should be recognized that the geriatric co-management model described in Dutch guidelines by the NVKG closely resembles the IGCT model implemented in Belgium. The structural co-management model refers to co-management as defined in the remainder of this report.

Although the KNMG does not specifically mention that clinical geriatric consults or geriatric co-management should be performed by IGCTs, it does advise multidisciplinary care for all frail older persons admitted to the hospital, which should be managed by a team with specific geriatric competencies.[136] A geriatric team is defined as *'a multidisciplinary team, in which team members work in close collaboration with each other, in order to establish geriatric care within the whole hospital'*. According to the SFH quality criteria, every hospital should have an operational geriatric expert team, either directly managing clinical care of frail older in- or outpatients (i.e. geriatric co-management) and/or should provide a clinical geriatric consult.[140] A protocol should be available indicating when, wherefore (problem) and by whom geriatric expert team services can be requested. The VMS program recommends CGA using geriatric co-management by specialist teams if interventions by the care team of the unit where the patient is hospitalized (CTU) are insufficient to manage manifested complications.[131]

Patient screening

The VMS program, KNMG, NVKG and the SFH quality criteria all emphasize the necessity to screen patients on admission for frailty and geriatric problems[131, 132, 135, 136]:

- Both the NVKG and the SFH quality criteria advise using the VMS program, i.e. to screen for risk of delirium, falls, malnutrition and physical limitations in patients aged 70 years or older.[131, 132, 135]
- The NVKG additionally advises the use of a formal screening tool.[132, 134] Specifically for general medical units and cardiothoracic surgery units, the ISAR-HP is recommended.[132]
- The KNMG advises all patients 65 years or older to be screened upon admission.[136]

After screening, the SFH quality criteria state that a protocol should indicate whether a geriatric expert team should intervene.[135] It should also mention who can request a CGA and which problems can be assessed by the geriatric expert team. Similarly, The NVKG proposed that a protocol should be available detailing which interventions are necessary based on the screening outcome.[132]

Patient assessment

Only the NVKG guideline details the full process of CGA using geriatric co-management:[132]

- Initial general assessment (mandatory). The geriatric team should always perform an assessment including:
  - the retrieval of general information (e.g. cause of admission, medical and medication history, consultation-oriented health history, treatment preferences);
  - somatic problems (e.g. health and physical examination, nutritional status),
  - functional status (e.g. hearing, speech, language and vision assessment, activities of daily living (ADL), instrumental activities of daily living (IADL), history of falls, mobility, incontinence);
  - psychological status (e.g. cognition, behavior, attention and mood assessment);
  - social problems (e.g. social situation, received care, caregiver strain).
- In-depth assessment (optional). Based on specific indications, a further in-depth assessment of somatic problems (profound specific health assessment, Mini Nutritional Assessment, further physical examination, weight and height, bladder scan, determining laboratory values, medical imaging, electrocardiogram), functional problems (impaired mobility assessment), psychological problems (additional health history, hetero anamnesis, psychiatric examination, Mini-Mental State Examination, Geriatric Depression Scale, Delirium Observation Scale) and social issues (more elaborate hetero anamnesis) can be performed.
- Consultation and follow-up of the recommendations. After the assessment, consultation and follow-up should always be provided. Care recommendations should be documented and reported to the treating physician, and the latter should discussed the advices with the patient and/or a proxy. The geriatric team should provide follow-up by evaluating if its recommendations are implemented, how identified problems are evolving and by identifying potential new problems. When discharged from the hospital, the geriatric team should provide written documentation on provided services to the appropriate primary healthcare professional. If indicated, they should also schedule an outpatient clinic appointment for further follow-up.

IGCT composition

According to the KNMG, the geriatric expert team (using the geriatric co-management model) should at least constitute of an internal medicine physician and a geriatric medicine physician.[136] It can additionally include a geronto-psychiatrist or a geriatrician. An advanced practice nurse (e.g. geriatric nurse practitioner or clinical nurse specialist) within the team safeguards and organizes optimal care and treatment conditions. The guideline of the NVKG for geriatric co-management states that an IGCT should consist at least out of a geriatric medicine physician and a nurse.[132] A dietician, physiotherapist and social worker can also be requested for consultation if indicated for specific problems. According to the SFH quality criteria an IGCT should at least have a geriatric medicine physician/geriatrician and a geriatric nurse (specialist) available for geriatric co-management.[135] A geriatric physiotherapist should also be available if

needed. They further recognize the possibility of supplementing the team with the following healthcare professionals: a speech therapist, occupational therapist, (neuro) psychologist, neurologist and a nurse specialized in dementia. The VMS program advices the use of an IGCT that can consist out of a geriatrician, geriatric nurse specialist, physiotherapist, occupational therapist, dietician, social worker and/or psychologist.[131]

The KNMG states that a physician should have overall responsibility for each patient case.[136] However, he/she should request information from the nurse with regard to care-oriented issues. The NVGK guidelines on CGA emphasize the importance of documenting who has overall treatment responsibility.[134] Further, task differentiation in geriatric co-management should be performed efficiently, taking into account the local circumstances. Also, a shared responsibility is maintained between the internal medicine physician and the geriatric medicine physician.

According to the SFH quality criteria, multidisciplinary team meetings within the IGCT should be scheduled at regular intervals.[135] Also, at least one member of the IGCT should participate in multidisciplinary team meetings of non-geriatric departments. Furthermore, an IGCT team member should be available for consultation, assessment and intervention if needed on a continuous basis (7 days a week, 24 hours a day).[140] The VMS program also states that specialist healthcare professionals should always be available for hospital-wide delirium management, providing consultation services and supporting care competencies of other health professionals.[131]

Quality indicators

The NVKG advices the use of specific quality indicators, scored on a yearly basis, as this could support guideline implementation.[134] They further advice that external organisations, such as the '*Inspectie voor de Gezondheidzorg*' (IGZ) or healthcare insurance companies, should include CGA related items in their existing set of indicators.[132] Quality indicators can also be used during quality visitations, which is mandatory for all geriatric medicine physicians in the Netherlands with respect to their accreditation. The NVKG proposes the use of four quality indicators,[132] (See Chapter 5) with regard to protocols detailing appropriate care interventions, assessment and documentation of geriatric co-management, transitional care and decisions concerning treatment and implementation responsibilities. For IGCTs, two quality indicators of the SFH quality label are of relevance.[135] First, patients should have their risk profile assessed, documented and have appropriate interventions implemented. Secondly, IGCTs should be available, regulated according to a standard protocol and participate in multidisciplinary team meetings. (See Chapter 5)

Financial structure

Since 2005, financial structure of Dutch hospitals is regulated by the '*Diagnose Behandeling Combinatie*' (DBC) system, which has been extensively described in a previous KCE report.[31] DBC aims to register complete processes of care for a patient within a medical specialty (i.e. from the initial consultation or hospital admission throughout treatment and the final check-up). As such, the total care of a patient by a medical specialty is financed rather than every single activity during hospital admission.[139] However, only those care activities encompassed by the DBC will be financed by the '*Nederlandse Zorgautoriteit*' (NZa). Since some care processes are only partly financed by the NZa, healthcare insurance agencies and hospitals are stimulated to negotiate pricing and financing of the remaining provided care. The document '*Regeling prestatie en tarieven medische specialistische zorg*' provides the financial judicial basis for CGA implemented through geriatric and structural co-management.[139] Before restructurations of the DBC-system in 2012, a single geriatric consultation could be charged for a specific problem. To date, this type of consultation is financed as geriatric co-management, leading to an increased compensation of the consulting physician[j].[138] On the other hand, a clinical geriatric consult is currently not financed through the DBC-system.

The KNMG advices a financial structure that stimulates appropriate care for frail older persons and should take the following aspects into consideration: 1) screening for frailty; 2) slower pace of older patients; 3) discussing care with patient and family; 4) conducting a multi-dimensional problem analysis; 5) functional approach to patient management; 6) drafting and implementing care plans; 7) coordinating care and 8) multidisciplinary team meetings.[136] The NVKG guideline states that healthcare insurance companies should be willing to invest in CGA by geriatric expert teams.[132] At the macroeconomic

level, a change in budgeting should happen in favor of geriatric care as geriatric expert teams help alleviate care needs in other departments. Geriatric medicine physicians should be given the opportunity, time and financial support to participate as co-managers. The financial benefits should therefore be returned to the geriatrics department. CGA by geriatric expert teams should also be facilitated by healthcare insurance companies, IGZ and hospital management with respect to financing, quality, safety and provide structure in which co-management can be implemented.

4.3.2.4 France

Legislative framework

IGCTs were first implemented in France in the 90's without any financial support or legislative framework, leading to high volume workloads threatening its functionability and feasibility. In 2002, the Ministry of Health decreed on the Geriatric Care Network (GCN) [Filière gériatrique] for a better management of older people.[145].The GCN was developed aiming to support medical, psychological and social care needs for all older people regardless of place of residency. The 2002 decree was designed to increase the accessibility of primary care and hospitals, for older people and to strengthen geriatric skills within both care sectors. This decree provided the basis for the establishment of IGCTs in larger hospitals and the creation of geriatric short-stay units, which have their own emergency department. It also favored admitting older people directly to this unit, bypassing the general emergency department of the hospital. The 2003 decree on 'Emergency Care' aimed to improve care transition from the emergency department[143] and encouraged direct admissions to the geriatric short-stay unit. If patients were admitted to an emergency department, IGCTs should be consulted and intervene early. The overall aim of this decree was to direct older people into the GCN. The *'plan d'urgence 2004-2007'*, which was developed in response of a heat wave in the summer of 2003, encouraged and financed the creation of numerous IGCTs.[143] In 2007, the revised decree stated that the GCN should consist out of a geriatric short-stay unit, a mobile team (i.e. IGCT) attached to the former, a geriatric outpatient consultation unit, a geriatric day hospital and a geriatric rehabilitation unit. This decree also regulated IGCT activities, which also provided the possibility for out-of-hospital consultations.[144]

IGCT implementation

In 2004, 96 IGCTs existed and seven were being developed according to a survey by the 'Direction de l'Hospitalisation de l'Organisation de Soins'.[148] These 96 teams constituted out of 35 medical FTEs and 55 non-medical FTEs. Despite the recommendation to implement IGCTs in large hospital settings only, most IGCTs (73%) originated from small hospitals based on the 'plan d'urgence', which did not require IGCTs to be associated with a geriatric short-stay unit. Consequently, these teams operated often isolated from a dedicated geriatric unit. At the start IGCTs were imposed by hospital management, but over time its functioning became more apparent and consultation requests were made more frequently. As such, a positive change in attitude towards IGCTs was noted over time.[148] According to a national survey conducted in 2011 (most recent figures available), 216 IGCTs have been implemented in French hospitals [149], indicating that around 31% of the 692 public acute care hospitals have an IGCT (excluding the 90 specialised hospital centres for psychiatric healthcare).[150]

A survey performed in 2005 by the 'Inspection Générale des Affaires Sociales' (IGAS) showed that IGCTs also provided consultations outside the hospital setting.[141] These were provided within Local Centers for Information and Coordination (CLICs), nursing homes, associated hospitals and the patient's home, focusing at disseminating advice to non-geriatricians. For example, a GP may request a CGA by an IGCT for a patient at home. They also trained home health and nursing home nurses and informal caregivers, aiming to prevent hospitalisations. These different service provisions were dependent on specific wishes of area care managers and hospital directions in support of the GCN.[141] Depending on the size of the hospital site, IGCT activities seemed to differ. Larger hospitals implemented IGCTs primarily within their own site, as these are characterized by a larger ED, a geriatric short-stay unit, differentiated medical specialisms and a high case load. However, smaller hospitals tended to provide mainly out-of-hospital consultations in collaboration with general practitioners, CLICs and associated or other health services.[141] According to the 2007 decree, IGCT services may be requested by the ED, medical or surgical units, local hospitals, nursing homes, CLICs, other older people health services and primary care physicians.[144] Overall, the hospitalist (i.e. physicians with a full time employment in the hospital) or general practitioner remain responsible for consulted patients' care. IGCTs work in close collaboration and give

advice to non-geriatric healthcare professionals and provide services to older patients on non-geriatric units. According to the 2011 survey, more than half (56%) of the IGCTs intervened at the ED and 46% intervened at medical-surgical units.[149]

IGCT composition

The 2007 decree states that all team members must be trained to perform a geriatric assessment.[144] The IGCT should be coordinated by a geriatrician active within the GCN. Besides one FTE geriatrician, IGCT staff should include one FTE nurse and one FTE social worker and collaborate with psychologists, occupational therapists, dieticians and administrative support workers. However, it is recognized that staff size should also be in accordance to hospital size. The 2005 survey by the *Inspection Générale des Affaires Sociales* (IGAS) further details IGCT composition and results indicate an average of two to five FTEs per team.[144] A geriatrician was often only part-time involved, working simultaneously in the geriatric short-stay unit. A nurse with geriatric expertise was always included in the team and a secretary was deemed necessary. An occupational therapist was appreciated for discharge planning. Social workers were implemented depending on the hospitals' preferences, but this discipline was only infrequently included in teams operating mainly within their own hospital site, as social workers from the hospital were readily available to organize discharge planning. If IGCTs operated mainly outside their hospital site, a social worker was deemed a useful team member to create contacts with external partner and services. Only very few IGCTs included a psychologist. Most IGCTs had a dedicated office, often located in the geriatric short-stay unit, facilitating communication within the GCN. Because of IGCTs being small, their organisation was often described as informal.

IGCT activities

The 2007 decree regulated the scope of IGCT functioning, which was defined as: *'providing best geriatric practice to teams in charge of older people in and outside of the hospital setting and advising other healthcare professionals in the homecare or nursing home setting'*. [144] The team provides a medical and -social assessment, drafts care plan proposals and supports discharge planning. IGCT activities are defined as: *'assessment of older people and training of non-geriatric healthcare professionals'*. The team must be attached to a geriatric short-stay unit and their advice should be sought in an early phase for medical and surgical older patients, after identifying their risk for functional decline or prolonged hospitalisation.[144] According to the 2011 survey, the average time between an IGCT request and intervention was 0.7 (SD ± 2.1) days.[149] The teams should also be implemented in EDs, should be involved in coordinating admissions to the geriatric short-stay unit and the geriatric rehabilitation unit, or should coordinate an outpatient consultation.[144]

Concerning patient screening, assessment and recommendations, no formal recommendations were found in the 2002 and 2007 decrees.[144, 145] However, the 2005 survey by the IGAS found that IGCTs targeted frail older people, i.e. patients presenting with cognitive impairment, social isolation, and functional decline.[141] IGCTs were mainly requested in non-geriatric units for a global geriatric evaluation (43%) and for an evaluation of disorientation problems (20%). Consultation requests were communicated by phone and documented in written by the IGCT. Theoretically, this information should be communicated to all team members, but this faced limitations when the IGCT operated outside the hospital. A secretary usually received consultation requests and communicated the information to other IGCT team members. Often, IGCT nurses were contacted by a patient's primary nurse or treating physician and performed the first part of the geriatric assessment, particularly providing support in complex social situations. A geriatrician then provided medical expertise and was responsible for communicating any recommendations. However, because of time constraints of the geriatrician, recommendations could also be communicated by IGCT nurses. A comprehensive geriatric care encompassed the following components, as surveyed by IGAS:

- functional dependency using an (instrumental) activity of daily living scale;
- cognition using the Mini-Mental State Examination;
- nutritional state using the Mini Nutritional Assessment;
- depression using the Geriatric Depression Scale.[141]

The 2011 survey showed that ADL (86%), IADL (82%), cognition (65%), pain (59%), nutrition (55%), and mood (38%) were most often assessed, with cognitive deficits (56%), malnutrition (49%), falls (37%) and delirium (25%) often being diagnosed by the IGCT.[149] An entire CGA was conducted in 35% of the consulted patients.[149] At the end of a consultation, a comprehensive

summary was drafted by a geriatrician or the multidisciplinary team, including the results of the CGA, a care plan, and recommendations regarding adaptations to the home environment and care orientation (home health services, institutionalisation). A copy was sent to the general practitioner.[141] The most recent national survey showed that 97.5% of the IGCTs made a patient summary report that was systematically sent to the treating physician in 72% of the cases.[149]

Furthermore, the survey observed a low adherence to IGCT recommendations stating time constraints as a main barrier.[141] However, IGCT results were still deemed positive. Patients were seemingly better orientated and could consult IGCT team members for information. Overall, nurses were reported to be more sensitive to geriatric care needs and problems. In comparison to medical and surgical physicians, nurses more often utilized IGCT services. Underuse has been reported in physicians because of misunderstanding patients' needs and potential benefits of the IGCT. The multidisciplinary team seemed to be requested in two types of situations:

- as "social workers" helping to manage the care of 'bed blockers' and to help alleviate the burden they pose on the hospital;
- as "emergency workers" treating urgent care-related requests.

However, collaboration between the IGCT and hospital units was often described as being difficult, mainly because of miscomprehension of IGCT activities. Teams reported a willingness to support unit personnel, but disliked receiving instructions on what to do. Overall, satisfaction with IGCT services grew, thereby leading to an increased and potentially too high caseload. Moreover, providing out of hospital consultation services further increased constraints on IGCTs.

IGCT evaluation

IGAS has proposed an evaluation of IGCTs in order to justify their existence, activities and financing by the government.[141] They propose to evaluate IGCT activities, their performance, the quality of their service, and the complexity of their cases. Specifically, 34 quality indicators were proposed (see Chapter 5). In October 2010, a working group on IGCT services was installed by the French Society for Geriatrics and Gerontology, their main goal being to make an inventory of IGCTs in France and to standardize their practices.[149] They conducted a retrospective study to analyze the inhospital activities of IGCTs according to the decree of 2007.[144] One month after discharge, 12% and 11% of consulted patients had experienced an unplanned ED readmission or were deceased, respectively. Independent risk factors for one month ED readmission were: taking more than four medications per day, having more than two comorbidities, having cognitive problems and being 85 years or older. No figures were reported on geriatric patients for whom no IGCT intervention was conducted.[149]

IGCT financing

All activities related to medicine, surgery and obstetrics have been financed by Diagnosed Related Groups in France since the beginning of 2009. IGCT financing is based on three successive sources. Social security provided 8.2 million euro for IGCTs in 2002. The *'plan d'urgence 2004-2007'* budgeted 50 million euro for the development of IGCTs over a three-year period. The 2007 decree organized multi-annual contracts for hospitals participating in the GCN, depending on their situation and hospital development.[143]

Geriatric Evaluation and Management Units (GEMU) and Acute Care for the Elderly Units (ACE)

GEMU and ACE are two types of discrete geriatric nursing units where the care for geriatric patients is coordinated by a dedicated multidisciplinary team. Both unit types implement the 'geriatric comprehensive assessment approach'. The GEMU-units include both the acute and rehabilitative care for inpatients while the ACE-units only deliver the acute care. Patients are transferred to long-term care facilities for the rehabilitation program.[14, 151]

4.3.2.5 United States of America

The majority of the aforementioned care models for older patients in the hospital setting originated from the USA. The Veterans's Administriation (VA), formalized in 1930 as a result of the Civil War in the nineteen century, was the first social model for geriatric care that played a major role in the development of geriatric science and providing quality care to older persons. [152] Care for older persons was also provided in nursing homes by religious organiations.[152] In the early 1980's Dr. Rubenstein and his colleagues pioneered the inpatient Geriatric Evaluation and Management Units (GEMU), a model that demonstrated effectiveness on physical performance, general health survey scales at hospital discharge, and institutionalisation at 1 year follow-up in meta-analyses.[21, 126, 153] GEMUs are commonly found in VA, but despite some benefits lasting up to 1-year follow-up, GEMUs are extremely rare in general medical settings due to high implementation costs.[152] However, taking into account the demonstrated efficacy of hospital based units, from 1985 a number of academic and community hospitals established ACE units, aiming at reducing functional decline in acutely ill, older patients.[153] Compared to usual care, ACE care was associated with fewer falls, lower incidence of delirium, less functional decline at discharge, lower costs and more home discharges.[19] Nevertheless, because implementing ACE units requires up-front investments by the hospital and given the lack of geriatricians in North America, the ACE program development was hampered and has not been fully implemented in the USA. It is estimated that merely between 100 and 200 of the over 5500 acute care hospitals in America (i.e. between 1.8 and 3.6%) have ACE units. [153] As a third possible approach , consultation models (e.g. IGCTs) can be situated in the timeline in-between the (small-scale) implementation of GEMUs and the development of ACE units. As GEMUs reached only around 4% of hospitalized elders, geriatric consultation was developed to provide a culture of multidisciplinary and multidimensional geriatric care for *all* hospitalized elders. However, already in the late 1980's and early 1990's, Cohen and Winograd demonstrated that recommendation-based care alone is insufficient to improve patient care, and therefore suggested that a more direct control of care might be necessary.[99, 102, 105, 109] In conclusion, although many inpatient geriatric care models originated in the USA, their uptake on a national level outside of research settings has been very limited.

4.3.3 International survey

4.3.3.1 Sampling strategy and sample selection

Selection of countries

Seven countries (Canada, France, Germany, Taiwan, the Netherlands, United Kingdom, USA) from three continents (North America, Europe and Asia) were considered for survey inclusion, as literature considering IGCT models in these countries was found through the database and hand search. Criteria and procedures applied for the further selection of countries were previously described (see 4.2.2). A structured overview of the in-or exclusion arguments per country is presented in Appendix 9. The final decision to in- or exclude a country in the international survey round depended on:

- the number of studies on IGCT care models identified in the literature review;
- the availability of grey literature and/or a legislative framework concerning IGCT;
- the possibility to obtain contact details at the hospital level;
- linguistic barriers: focus on English-, French- and/or Dutch-speaking countries

Germany and Taiwan were excluded based on the linguistic criterion, and since no legislative framework or grey literature regarding IGCT was found. Canada, the UK and USA were excluded for survey participation based on the following criteria:

- a merely small-scale or regional implementation of the IGCT care model (UK, USA, Canada);
- the absence of a related and published legislative framework and best-practice examples of IGCT (Canada, USA);
- the lack of grey literature concerning IGCT care (USA only);
- the limited number of primary studies on IGCT identified through the aforementioned scoping review (Canada, UK).

One grey document on the 'Senior Friendly Hospitals' program in Canada was retrieved. The finding that this accreditation program did not mention IGCT care was considered an additional exclusion criterion for this country (see 4.3.2.1). Whereas one grey document of the Royal College of

Physicians (UK) was retrieved, the toolkit was insufficiently detailed to judge whether the proposed 'in-hospital geriatric liaison services' are fully congruent with the IGCT concept as defined in the objectives of this study (see 4.3.2.2.). The lack of additional grey literature was an additional argument to exclude the UK.

As a consequence, it was decided to include two countries in the survey. Firstly, France was included, because the IGCT care model has been implemented in this country on a national level for over 10 years and since several publications were identified describing French IGCT best-practices,related legislation and quality indicators. Secondly, the Netherlands was included, as the presence of an IGCT has recently been recognized as a necessary component to obtain a Senior Friendly Hospital Quality Label ('Keurmerk Seniorvriendelijk Ziekenhuis'). Furthermore, the IGCT care model had recently been implemented in the majority of Dutch hospitals.

Selection of hospitals

Based on the aforementioned selection of two countries (i.e. France and the Netherlands) and available study resources, a two-staged purposive sampling strategy was applied, aiming at the inclusion of at least 10 hospitals per country:

- In a first round, 25 French and 26 Dutch hospitals were invited for survey participation in July 2014, thus allowing for a potentially low response rate (around 40%).

  Selection of hospitals in The Netherlands was based on the website of the Senior Friendly Hospitals Quality Label.[137] Of the 127 hospitals listed on the website, data was availble for 99 hospitals. The majority (83% n = 82) of these hospitals had a specialized team for older people. All hospitals scoring at least 75% on the criterion 'presence of a specialized team for older people' (n = 56 hospitals) were listed. Contact details (e-mail) of the hospitals' IGCT or geriatric department were identified through telephone contact, and by contacting administrative services of a national professional organisation for geriatrics ('Nederlandse Vereniging voor Klinische Geriatrie') and internal medicine physicians ('Nederlandse Internisten Vereniging').

  To identify best-practices in France, an initial list of hospitals with an IGCT service was made based on grey literature from 2005.[141] To obtain more recent information regarding IGCT implementation, regular e-mail contacts were maintained with the chairman of a national working group on IGCT services (under auspices of the French National Society for Geriatrics and Gerontology), and with two geriatricians who had previously published several papers regarding the IGCT care model. As such, 50 French hospitals with an IGCT were selected. Since most of these hospitals only provided telephone contact details, a native French speaking member of the research team contacted these hospitals by telephone to request survey participation and retrieve e-mail contacts.
- After three weeks, the resulting response rate was considerably below the threshold of 40% (n = 1 and n = 4 completed surveys for France and the Netherlands respectively).Therefore, e-mail reminders were sent to all hospitals from the first round and a second inclusion round was performed for both countries, resulting in the additional selection of 13 French and 7 Dutch hospitals.

The survey was closed after 50 days, and resulted in the inclusion of 14 French and 11 Dutch hospitals.

4.3.3.2 Development of the questionnaire

Validation of the questionnaire

The content validity of the provisional English questionnaire was assessed by 15 of the 24 selected Belgian experts, indicating an overall response rate of 62.5%. The majority of experts were Flemish (n = 9; response rate 82%), while four experts (response rate 67%) were from the Brussels-Capital region. A minority (n = 2; response rate 29%) were professional caregivers from Wallonia. Different healthcare professions were represented, including mainly geriatricians (n = 6) and geriatric (head) nurses (n = 5), but also occupational therapists (n = 2%) and nursing managers (n = 2).

Sixty-two of the 69 items (90%) had an excellent content validity (I-CVI ≥0.78 and k* > 0.74), while the remaining 7 items (10%) had a good content validity (I-CVI < 0.78 and 0.60 ≤ k* ≤ 0.74). The S-CVI universal agreement was 0.35 and the average S-CVI was 0.91. Detailed results for individual questions can be found in Appendix 6.

Several adjustments to the initial draft of the questionnaire (Appendix 6) were made, based on the experts' recommendations. Questions were organized under rephrased and additional subheadings, and the sequence

of the subheadings and some individual questions were changed to promote user-friendliness and clarity of the questionnaire. Eight items with an excellent content validity (item 3biv, 3cviii, 5, 6d, 18c, 18d, 23 and 26a) were deleted due to their redundancy and/or to reduce the questionnaire's length, by removing questions on the most detailed level. Two items were deleted due to their lower I-CVI scores (item 20b and 28d). Three items were added to retrieve more detailed information about the respondent and the hospital. Seven items were added, to give respondents the opportunity to specify some of their answers (e.g. on what types of other units the IGCT provides consultation; which types of formal collaboration exist between the IGCT and GRNs,…). Some questions were split-up or regrouped, to allow for question skipping conditions in the online survey and thus enhancing the specificity of answers and user-friendliness of the questionnaire. Lastly, some definitions of important concepts in the lexicon were revised. As a result, the final version of the questionnaire (Appendix 7) consisted of 71 questions with a slightly different content, wording and sequence than the provisional version that was validated by the experts.

Testing of the questionnaire

No major remarks were given by the IGCT nurse who tested the online survey for its user-friendliness. No problems with the number of questions and the time needed to fill out the questionnaire (approximately 40 minutes) were reported. This testing procedure resulted in minor revisions of spelling and question conditions (e.g. "If you answered 'no', skip the next question and go to question X").

4.3.3.3 Data cleaning and analysis

The database was thoroughly checked for completeness and correctness, and personalized e-mails were sent to respondents aiming at correcting missing or conflicting data. Descriptive statistics (means, medians and ranges for continuous variables; frequencies and percentages for categorical data) were used to describe sample characteristics and to compare item-level results of the questionnaire at the country-level (e.g. French versus Dutch hospitals). For sample description (Table 16), percentages regarding hospital beds and admissions were calculated based on raw data provided by respondents. All analyses were performed with the statistical software SPSS for Windows, version 20.0 (SPSS, Inc., Chicago, IL).

4.3.3.4 Sample characteristics

A total of 25 hospitals participated. All surveys were completed by a healthcare professional directly involved in the hospital's IGCT activities, mostly being the IGCT's geriatrician (80%, n = 20 hospitals). The French sample included mainly academic (71.4%, n = 11) and multi-site (i.e. more than one geographical location) (78.6%, n = 10) hospitals, whereas in the Netherlands single site hospitals (72.7%, n = 8) without an academic status (90.9%, n = 10) mostly responded to the survey.

Consequently, the number of hospital beds and hospital admissions of the included hospitals varied widely both within and between countries (Table 16). For hospitals in France, a median of 1 395 beds (range 214 – 2 722), 71 114 hospital admissions (range 13 764 – 180 800) and 10 871 hospital admissions of patients aged 75 years or older (range 2000 – 33 145) were reported for the year 2013. All but one hospital reported having a geriatric unit (92.3%) at their hospital site. In this unit, a median of 136 beds (range 26 – 807) and 2 509 admissions (range 800 - 7 500) were reported. In the Netherlands, a median of 425 beds (Range 300-640), 20 980 hospital admissions (range 12000 – 48.000) and 6 240 hospital admissions of patients aged 75 years or older (range 3 646 -150 00) were reported for the year 2013. All but three hospitals reported having a geriatric unit (70%). In these units, a median of 15 beds (Range 12 – 24) and 405 admissions (range 280-550) each year were reported.

Patients aged ≥ 75 years represented on average 21.7% (range: 10% - 37% on hospital level) and 34.7% (range: 20 - 54%) of the total number of hospital admissions for French and Dutch hospitals, respectively. In both countries, only a minority of patients aged ≥ 75 years were hospitalized on a geriatric unit (range: 3 - 23%), excluding data from one French hospital in which 75% of older patients were hospitalized on a geriatric unit.

Most hospitals (96%, n = 24) provided data on the availability of geriatricians. In line with the aforementioned country-level differences in hospital sizes, French hospitals reported employing more geriatricians than Dutch hospitals (median head count: 15 (range 4 - 39) versus 3 (range 1 - 6); Median FTE 13 (range 1.7 - 32) versus 2.6 (range 0.75-5.30), respectively). (Table 16)

In 2013, French IGCTs assessed a median of 1 022 patients (range 450 – 2 000), while Dutch IGCTs assessed a median of 963 patients (range 100 – 1 500).

Table 16 – General characteristics of participating hospitals

Country	Hospital	Academic hospital	Multi-site hospital	Hospital beds		Hospital admissions in 2013			Geriatricians		Emergency department
				Total	Geriatric unit, n (%)	Total	Patients aged ≥ 75 years, n (%)	Geriatric unit, n (%)	Head count	FTE	
France n = 14	CH Henri Duffaut, Avignon	No	No	776	175 (23)	41 748	8 000 (19)	1 699 (21)	9	8.0	Yes
	CHU de Bordeaux	Yes	Yes	2 936	90 (31)	131 192	-	3 537 (-)	15	13.0	Yes
	CH de Dax-Côte d'Argent	No	Yes	1 000	94 (9)	20 000	2 000 (10)	1 500 (75)	16	11.0	Yes
	CHU de Grenoble	Yes	Yes	2 170	112 (5)	89 596	-	2 494 (-)	15	13.0	Yes
	CHRU de Montpellier, Antonin Balmes	Yes	Yes	-	-	-	-	-	-	-	Yes
	CHR d'Orleans	No	Yes	1 065	160 (15)	108 675	23 928 (22)	3 444 (14)	20	16.0	Yes
	Hôpital Ambroise Paré, Paris	Yes	Yes	468	26 (6)	35 548	10 617 (30)	800 (8)	8	8.0	Yes
	Hôpital Broca, Paris	Yes	Yes	1 395	558 (40)	49 862	9 942 (20)[a]	1 753 (18)	30	13.3	Yes
	Hôpital Européen George Pompidou, Paris	Yes	No	837	26 (3)	43 212	10 871 (25)	802 (7)	7	1.7	Yes
	CHU de Rouen	Yes	Yes	1 666	88 (5)	138 116	-	2 650 (-)	26	24.0	Yes
	CH de Sélestat	No	No	214	n/a	13 764	5 044 (37)	n/ap	4	2.6	Yes
	CHU de Strasbourg	Yes	Yes	2 285	180 (8)	128 280	23 845 (19)	3 605 (15)	19	17.2	Yes
	CHU de Toulouse	Yes	Yes	2 880	294 (10)	180 800	33 145 (18)	7 500 (23)	39	32	Yes
	CHRU Brest	Yes	Yes	2 537	807 (32)[b]	143 569	24 888 (17)	2 523 (10)	14	13.5	Yes
The Netherlands n = 11	IJsselland Ziekenhuis, Capelle-aan-den-Ijssel	No	No	390	12 (3)	21 000	7 600 (36)	333 (4)	2	1.8	Yes
	Deventer Ziekenhuis, Deventer	No	No	362	14 (4)	17 899	5 500 (31)	280 (5)	5	3.3	Yes
	Ziekenhuis Gelderse Vallei, Ede	No	No	505	12 (2)	48 000	12 400 (26)	405 (3)	4	3.2	Yes
	Beatrixziekenhuis, Gorinchem	No	Yes	312	n/a	15 556	3 646 (23)	n/ap	1	0.75	Yes
	Martini Ziekenhuis, Groningen	No	No	500	n/a	28 000	15 000 (54)	n/ap	3	2.0	Yes
	Medisch Centrum Leeuwarden, Leeuwarden	No	No	623	24 (4)	29 882	12 310 (41)	550 (5)	6	5.2	Yes
	Diaconessenhuis, Leiden	No	No	300	n/a	12 000	6 240 (52)*	n/a	3	2.6	Yes
	Radboud Medical Center, Nijmegen	Yes	No	640	15 (2)	21 847	4 445 (20)	475 (11)	6	5.3	Yes
	Orbis Medical Center, Sittard	No	No	425	22 (5)	17 910	4 449 (25)	309 (7)	2	1.7	Yes
	ZorgSaam Zeeuws-Vlaanderen, Terneuzen	No	Yes	421	n/a	13 582	5 000 (37)	n/a	2	1.2	Yes
	TweeSteden ziekenhuis, Tilburg	No	Yes	476	24 (5)	20 980	7 699 (37)	543 (7)	5	4.3	Yes

CH = Centre Hospitalier; CHU = Centre Hospitalier Universitaire; CHRU = Centre Hospitalier Régional et Universitaire; n/a = not applicable (hospital has no geriatric unit); - Data is missing from survey results; FTE = Full-time equivalent; M = mean; SD = standard deviation; n/a = not applicable; - Data missing from survey results

[a] Figures of patients aged 70 years or older; [b] One of the hospital sites is a geriatric rehabilitation hospital

4.3.3.5 Summary and report of results

Establishment, composition and educational requirements for IGCTs

Overall, more than half of all included IGCTs (56.0%, n = 14) were established between 2000 and 2009, while a minority of teams were established earlier (24.0%, n = 6) or more recently (20.0%, n = 5). The latter five teams all originate from the Netherlands.

The following disciplines were identified as members of the IGCT:

- *Physicians.* Geriatricians are core members of almost all responding IGCTs (96.0%, n = 24 teams), with head counts (number of persons) varying between 1 and 5 and full-time equivalents (FTE) between 0.2 and 3.0. Internal medicine physicians were only available for around half of both French (42.9%, n = 6) and Dutch IGCTs (54.5%, n = 6), mostly through an on call availability. (Geronto)psychiatrists were represented as core members in only two hospitals, one in France and one in the Netherlands. However, in the Netherlands, in over half of hospitals (54.5%, n = 6) they were available on call, compared to over one quarter (28.6%) in France.
- *Nurses.* General nurses were reported by half of the hospitals to be core members in French hospitals, which was only the case for one hospital in the Netherlands. On the other hand, nurses with geriatric training were present in 81.8% of Dutch IGCTs and in 71.4% of French teams as core members. Few nurse practitioners were available in both countries, i.e. one Dutch team (7.1%) and three French teams (27.3%). Although a clinical nurse specialist was available in only one French teams, 72.7% of Dutch hospitals (n = 8) reported them as core members.
- *Occupational therapists* were available in 64.3% of French hosptials and 72.7% of Dutch hospitals, whether as core members or available on call.
- *Other disciplines.* Physiotherapist, psychologist, speech therapist, dietician, social worker and pharmacist were not often included as a core member. The majority of Dutch hospitals (i.e. 63.6% - 81.8%) had these allied health professionals available on call, which was less the case in France (7.1% - 50%). However, 71.4% of French hospitals did report administrative support workers as core members. Three Dutch IGCTs did report using a transfer and discharge nurse (n = 1), an activity therapist (n = 1) and a (geriatric medicine) physician in training (n = 1).

Table 17 – Composition of IGCTs

	France (n = 14)				The Netherlands (n = 11)			
Discipline	Core members			Available on call, n (%)	Core member, n (%)			Available on call, n (%)
	Number of teams (%)	Head count, Me (range)	FTE, Me (range)		Number of teams (%)	Head count, Me (range)	FTE, Me (range)	
Internal medicine physician	2 (14.3)	1 (1-1)	0.6 (0.3-1)	4 (28.6)	2 (18.2)	2 (1-3)	1.7 (0.8-2.6)	4 (36.4)
Geriatric medicine physician	14 (100)	2.5 (1-5)	1.7 (0.6-3.0)	0 (0)	10 (90.9)	2 (1-3)	0.9 (0.2-2)	0 (0)
(Geronto)psychiatrist	1 (7.1)	n/a	n/a	4 (28.6)	1 (9.1)	n/a	n/a	6 (54.5)
General nurse	7 (50.0)	1 (1-2)	0,9 (0.5-1.8)	0 (0)	1 (9.1)	n/a	n/a	3 (27.3)
Nurse with geriatric training	10 (71.4)	1 (1-4)	1 (0.8-2)	0 (0)	9 (81.8)	2 (2-4)	1.6 (0.4-2.4)	2 (18.2)
Psychiatric nurse	0 (0)	n/a	n/a	2 (14.3)	2 (18.2)	1.5 (1-2)	0.9 (0.3-1.6)	5 (45.5)
Nurse practitioner	0 (0)	n/a	n/a	1 (7.1)	3 (27.3)	1 (1-2)	0.8 (0.3-1.9)	0 (0)
Clinical nurse specialist	1 (7.1)	n/a	n/a	0 (0)	8 (72.7)	1 (1-2)	0.8 (0.4-1.4)	2 (18.2)
Occupational therapist	7 (50.0)	1 (1-2)	0.5 (0.4-1.5)	2 (14.3)	1 (9.1)	n/a	n/a	7 (63.6)
Physiotherapist	1 (7.1)	n/a	n/a	4 (28.6)	3 (27.3)	1 (1-2)	0.2 (0.2-2)	7 (63.6)
Psychologist	2 (14.3)	1 (1-1)	0.8 (0.5-1.0)	5 (35.7)	0 (0)	n/a	n/a	8 (72.7)
Speech therapist	0 (0)	n/a	n/a	1 (7.1)	0 (0)	n/a	n/a	8 (72.7)
Dietician	0 (0)	n/a	n/a	7 (50.0)	1 (9.1)	n/a	n/a	8 (72.7)
Social worker	6 (42.9)	1 (1-1)	0.9 (0.5-1.0)	1 (7.1)	1 (9.1)	n/a	n/a	8 (72.7)
Pharmacist	2 (14.3)	-	-	5 (35.7)	0 (0)	n/a	n/a	9 (81.8)
Administrative support	10 (71.4)	1 (1-2)	1 (0.5-2.0)	0 (0)	0 (0)	n/a	n/a	0 (0)
Other	0 (0)	n/a	n/a	0 (0)	3 (27.3)	1 (1-2)	1 (0.1-1.6)	0 (0)

Me = median; n/a = not applicable (discipline is not represented as a core member of IGCTs); - Data missing from survey results

In almost all French (85.7%, n = 12) and Dutch (90.9%, n = 9) hospitals additional training was required to function as a core member of an IGCT. In France, all IGCT members required working experience in geriatrics and the majority (66.7%, n = 8) required special courses or education in geriatrics. Also, one hospital reported requiring internal education and one hospital stated the importance of knowledge of other hospital services and environment. In the Netherlands, 80.0% (n = 8) of the hospitals required both working experience and education in geriatrics. One hospital required out of hospital departmental experience and one hospital requires specific training in a particular screening procedure to identify frail older persons.

IGCT availability, collaboration with GRNs and team meetings

- Type of units that consult IGCTs. In both French and Dutch hospitals, all responding IGCTs intervened regularly on general surgical and non-surgical units, but less so on an intensive care (21.4%, n = 3 and 27.3%, n = 3; respectively) and psychiatric units (n= 2, 14.3% and n = 1, 9.1%; respectively). Regular IGCT interventions at the emergency department seem to be more frequently performed in France (78.6%, n = 11) than in the Netherlands (54.5%, n = 6) (Table 18). Seven hospitals (i.e. 4 in France and 3 in the Netherlands) indicated being available at the day care hospital. Four Dutch hospitals (36.4%) and one French hospital (7.1%) regularly provided IGCT consultation to external care services (i.e. nursing home, rehabilitation service, other hospital). Also, one Dutch IGCT team regularly visited the stroke unit of their hospital.

- Availibility and out-of-office permanancy. All included IGCTs in both countries indicated being available during office hours on weekdays. However, French IGCTs do not provide services on Sundays, holidays, or during evenings and nights and only one hospital indicated availability on Saturday. The latter is in contrast with the broader availability of Dutch IGCTs, i.e. 45.5% (n = 5) provided services during weekends, 27.3% (n = 3) on official holidays, and over half (63.6%, n = 7) are available 24 hours per day. This continuous service provision was mainly organized through the on call availability of the IGCT physician(s) outside office hours.
- The geriatric resource nurse (GRN) model was only used by a minority of all included hospitals (20%, n = 5) and mostly used in the Netherlands (80%, n = 4). Dutch hospitals implemented the GRN model on general non-surgical units (100%, n = 4) but less often on general surgical (n = 2, 50%) or psychiatry units (25%, n = 1) (Table 18). No hospital reported GRN availalbity on the intensive care unit or emergency department. In France, the GRN model was only implemented by one hospital on a subacute care and rehabilitation unit (i.e. external consultation Table 18). Formal collaboration between IGCTs and GRNs existed in three (75%) Dutch hospitals, focusing on the identification of frail older patients and the education and/or coaching of care teams (100%) on nongeriatric units. GRNs were less often involved in patient assessment and formulation and/or communication of IGCT recommendations for consulted patients, as reported by only one hospital.
- IGCT meetings. In both countries, most teams organized internal multidisciplinary team meetings (n = 8, 72.7% for Dutch; n = 10, 76.9% for French hospitals) to discuss patients for whom consultation is provided. The majority (n = 5, 62.5% of Dutch; n = 9, 90% of French hospitals) organized 1 to 2 meetings per week.

Table 18 – IGCT and GRN availability on hospital units

Survey item	France n = 14				The Netherlands n = 11			
	IGCT availablity			GRNs availability, n (%)	IGCT availablity			GRNs availability, n (%)
	On a regular basis, n (%)	Rarely, n (%)	Never, n (%)		On a regular basis, n (%)	Rarely, n (%)	Never, n (%)	
Overall		**14 (100)**		**1 (7.1)**		**11 (100)**		**4 (36.4)**
General surgical	14 (100)	0 (0)	0 (0)	0 (0)	11 (100)	0 (0)	0 (0)	2 (50)
General non-surgical	14 (100)	0 (0)	0 (0)	0 (0)	11 (100)	0 (0)	0 (0)	4 (100)
Intensive care unit	3 (21.4)	9 (64.3)	2 (14.3)	0 (0)	3 (27.3)	7 (63.6)	1 (9.1)	0 (0)
Emergency department	11 (78.6)	2 (14.3)	1 (7.1)	0 (0)	6 (54.5)	4 (36.4)	1 (9.1)	0 (0)
Psychiatry	2 (14.3)	8 (57.1)	4 (28.6)	0 (0)	1 (9.1)	5 (45.5)	5 (45.5)	1 (25)
Day hospital	2 (14.3)	2 (14.3)	-	-	2 (18.2)	1 (9.1)	-	-
Stroke unit	-	-	-	-	1 (9.1)	-	-	-
External consultation	1 (7.1)	1 (7.1)	-	1 (100)	4 (36.4)	-	-	-

GRN = geriatric resource nurse; - Other units/departments not reported by other responding hospitals

Detection and selection of frail older patients

The screening of older hospitalized people aims to identify frail patients at risk for adverse outcomes, such as functional decline, institutionalisation, or hospital readmission and is suggested in the literature to maximize the benefits of CGA. [15, 108] In the survey was explored if screening was conducted in Dutch and French hospitals, who was screened and by whom.

- Is screening a wide-spread practice? Country- and hospital-level differences for several aspects in the detection of frail older patients were identified. Importantly, only three (21.4%) French hospitals used a formal screening procedure, whereas all Dutch hospitals (n = 11) screened older patients for having a geriatric profile. Almost all remaining French hospitals (n = 8) indicated barriers hampering the usage of a screening procedure, such as doubting the added value of a screening process (n = 4), judging the procedure as too time-consuming (n = 3) and doubting the appropriateness of existing screening instruments (n = 2). In addition, two French hospitals stated currently developing a screening procedure (Table 19).
- Who is responsible for the screening? In all included hospitals applying a formal screening procedure (56%, n = 14), nurses of the care team where the patients is hospitalized (CTU) are primarily responsible for screening performance (i.e. IGCTs were not involved in the screening process). Additionally, one French hospital also involved physicians and nursing assistants of the CTU.
- Which patient profiles are screened? All Dutch hospitals aimed to screen all admitted patients aged > 70 years (unplanned admissions), while the three French hospitals applied different criteria for population selection (i.e. either a focus on older patients admitted through the ED, or on patients aged > 75 years admitted to general (non-)surgical units). (Table 19).
- How soon after hospital admission are patients screened? Almost all hospitals in the Netherlands (90.9%, n = 10) screened their patients within 24 hours after admission, whereas two of the three hospitals in France did so within 48 hours.

- Is screening repeated? For the majority of patients, in both France and the Netherlands, screening was not repeated during hospitalisation (66.7%, n = 2; 81.8%, n = 9, respectively).
- Which screening instruments are used? A variety of screening instruments was applied by hospitals in both countries. Internationally recognized screening instruments were only applied by two Dutch hospitals (18.2%, n = 2), both of them used the Identification for Seniors At Risk (ISAR) instrument [154]. In France, only one hospital used an internationally validated screening instrument, i.e. the Triage Risk Screening Tool (TRST)[155]. The majority of Dutch hospitals used country-specific instruments (63.6%, n = 7), such as the Groningen Frailty Indicator (GFI) (18.2%, n = 2) [156] and the National Patient Safety Program (VMS) criteria (45.5%, n = 5) [131]. In one French hospital a self-developled screening instrument, based on the ISAR, was used. Table 19)
- What happens with the screening results? In the Netherlands, all hospitals added the screening results to the patient's file, whereas one of the three hospitals in France did not. Almost half of the hospitals in the Netherlands automatically initiated an IGCT assessment after a positive screening (45.5%, n = 5) and 27.3% (n = 3) did so when deemed necessary by the IGCT or when deemed necessary by the CTU. In France, two of the three hospitals who screened their patients, performed an IGCT assessment when deemed necessary by the CTU.

Table 19 – Detection and selection of frail older patients

Survey item	France n = 14	The Netherlands n = 11
Screening performed, n (%)	3 (21.4)	11 (100)
Population screened, n (%)		
All patients aged ≥ 70 years	0 (0)	11 (100)
All patients aged ≥ 75 years	2 (66.7)	0 (0)
Admitted to the ED n (%)	1 (33.3)	-
CTU responsible for screening	3 (100)	11 (100)
Professionals responsible for screening, n (%)		
Nurse / nurse assistant	3 (100)	11 (100)
Physician	1 (33.3)	0 (0)
Time when screening is performed, n (%)		
Within 24 hours after hospital admission	1 (33.3)	10 (90.9)
Within 48 hours after hospital admission	2 (66.7)	1 (9.1)
Is screening repeated, n (%)		
No	2 (66.7)	9 (81.8)
Yes, systematically	0 (0)	1 (9.1)
Yes, but not systematically	1 (33.3)	1 (9.1)
Screening instrument(s) used, n (%)		
Internationally recognized	1 (33.3)	2 (18.2)
Self-developed	1 (33.3)	0 (0)
Country-specific	0 (0)	7 (63.6)
Combination several types	0 (0)	2 (18.2)
IGCT intervention after positive screening, n (%)		
Automatically	1 (33.3)	5 (45.5)
If necessary according to IGCT	0 (0)	3 (27.3)
If necessary according to CTU	2 (66.7)	3 (27.3)
Screening results added to patient's file, n (%)	2 (66.7)	11 (100)

CTU = care team of the unit where the patient is hospitalized; ED = Emergency department

IGCT Assessment

All IGCTs in France and the Netherlands assessed medical history, acute medical problems and performed a medication review on a regular basis. Review of diagnostic procedures (81.8%, n = 9) and physical examination (63.6%, n = 7) happened to a lesser extent in the Netherlands then in France (92.9%, n = 13 and 100%, n = 14 respectively). In France, all IGCTs assessed both basic and instrumental activities of daily living, mobility, nutritional status and pain regularly. All IGCTs in the Netherlands indicated assessing basic activities of daily living; mobility and sleeping disorder and most hospitals assessed nutritional status (90.9%, n = 10), pain (90.9%, n = 10), instrumental activities of daily living (81.8%, n = 9) and vision (81.8%, n = 9) regularly. Around half of the French (57.1%, n = 8) and Dutch (54.4%, n = 6) IGCTs assessed fatigue on a regular basis. Hearing was assessed regularly by 71.4% (n = 10) and 72.7% (n = 8) of the hospitals in France and the Netherlands respectively and swallowing function by 64.3% (n = 9) and 72.7% (n = 8) (Table 20). All hospitals in both countries assessed for delirium, dementia and depression on a regular basis. Almost all Dutch hospitals (90.9%, n = 10) and all French hospitals assessed orientation regularly. Social aspects, i.e. place of residency and the availability of professional and informal care were regularly assessed by all IGCTs. Caregiver burden was assessed by the majority of the French (85.7%, n = 12) and the Dutch (63.6%, n = 7) hospitals. All hospitals added the assessment results to the patient's file.

Table 20 – Items regularly assessed in the IGCT patient assessment

Assessment domain	Assessment item	France n (%)	The Netherlands n (%)
Medical	Medical history	14 (100)	11 (100)
	Acute medical problems	14 (100)	11 (100)
	Medication review	14 (100)	11 (100)
	Results of diagnostic procedures	13 (92.9)	9 (81.8)
	Physical examination	14 (100)	7 (63.6)
Functional	Basic ADL	14 (100)	11 (100)
	Instrumental ADL	14 (100)	9 (81.8)
	Fatigue	8 (57.1)	6 (54.4)
	Hearing	10 (71.4)	8 (72.7)
	Mobility	14 (100)	11 (100)
	Nutritional status	14 (100)	10 (90.9)
	Pain	14 (100)	10 (90.9)
	Sleeping disorders	10 (71.4)	11 (100)
	Swallowing function	9 (64.3)	8 (72.7)
	Vision	12 (85.7)	9 (81.8)
Cognitive/ psycho-logical	Delirium	14 (100)	11 (100)
	Dementia	14 (100)	11 (100)
	Depression	14 (100)	11 (100)
	Orientation	14 (100)	10 (90.9)
Social	Place of residence	14 (100)	11 (100)
	Professional care available	14 (100)	11 (100)
	Informal care available	14 (100)	11 (100)
	Caregiver burden	12 (85.7)	7 (63.6)
	Other: care plan	1 (7.1)	0 (0)
Other	Juridical protection status	1 (7.1)	0 (0)
	Ethical aspects of care	1 (7.1)	0 (0)
Assessment results added to patient's file		14 (100)	11 (100)

ADL: activities of daily living

Patient recommendations and follow-up by IGCTs

- Type of recommendations and use of guidelines and protocols. IGCT recommendations and interventions made by IGCTs differ considerately between France and the Netherlands. In France, most recommendations made were concerning mobility and falls, care orientation, cognition and nutrition, while the Netherlands focused more on on delirium, mobility and falls. Eight Dutch hospitals (72.7%) reported using guidelines and protocols. In France, only 28.6% (n = 4) of the reporting hospitals used guidelines or protocols.
- Communication of recommendations. Both in France and the Netherlands, recommendations were frequently added to the patients file (92.9%, n = 13 and 90.9%, n = 10 respectively). Direct contact with the CTU also seems to be a frequently used route to communicate recommendations by 78.6% (France) and 90.9% (the Netherlands) of the IGCTs. Dutch hospitals (72.7%, n = 8) also attend CTU meetings which French hospitals did not. French hospitals reported relying more on printing recommendations on paper (71.4%, n = 10 versus 36.4%, n = 4of Dutch hospitals), while the hospitals in the Netherlands more frequently reported using telephone contact with the CTU (81.8%, n = 9 versus 0% of French hospitals).
- Implementation of recommendations. In most of the reporting hospitals in France (78.6%, n = 11), the care team of the unit were the patient is hospitalized implements the recommendations. Three hospitals also reported having recommendations partly implemented by the care team of the unit (CTU) and partly by the IGCT. In the Netherlands, half of the responding hospitals (54.5%, n = 6) reported also party implementing recommendations by the CTU and by the IGCT, while 4 hospitals (36.4%) reported having the CTU only implement the recommendations and 1 hospital (9.1%) having the recommendations implemented directly by the IGCT. Of those IGCT teams implementing recommendations in France (n = 3), all teams reported implementing medical diagnostic (e.g. ordering laboratory tests or diagnostic procedures), medical therapeutical (e.g. starting or stopping prescriptions), cognitive (e.g. diagnosing dementia or delirium management), and nutritional (e.g. changing the patient's diet) recommendations. Only one hospital (33.3%) reported implementing functional (e.g. assisting in activities of daily living) or social (e.g. organizing home care services) recommendations. In the Netherlands, of the 7 teams reporting implementing recommendationts directly by the IGCT, most hospitals (85.7%, n = 6) report implemented medical therapeutical and cognitive recommendations. Just over half (57.1%, n = 4) reported implementing medical diagnostics recommendations directly, while just under half (42.9%, n = 3) reported implementing functional, social or nutritional recommendations.
- Adherence to recommendations. When recommendations were implemented by the CTU, all reporting hospitals in France and all but one in the Netherlands rated the overall adherence as good. Almost all Dutch hospitals (90.9%, n = 10) reported taking actions to improve adherence to IGCT recommendations. The most cited include providing educations sessions (n = 5, 50%) and coaching the CTU (n = 3, 33.3%). Other initiatives included surveying the CTU, providing follow-up, introduction of geriatric resource nurses, participation in multidisciplinary team rounds, simplifying advice, limiting the number of recommendations, collaboration between the IGCT and the CTU, nominating collegues as champion in geriatric care and providing communications' training for IGCT members. In France, only 8 hospitals (57.1%) reported actions to improve adherence, which included distribution of care protocols, coaching CTUs, follow-up, limiting and prioritizing recommendations (n = 2, 25.0%) and to a lesser extent scheduling regular team meeings and providing recommendations using several mediums (n = 1, 12.5%).
- Follow-up of recommendations by the IGCT. In French hospitals, one IGCT (8.3%) reported not providing any follow-up, five (41.7%) provided follow-up if requested by the CTU, four (28.6%) stated that follow-up was provided automatically until the IGCT decided it was no longer necessary and two (16.7%) provided follow-up until the patient was discharged from the hospital. In the Netherlands, all but one responding hospital (90.9%, n = 10) provided follow-up automacially until the IGCT decided it was no longer necessary. One hospital followed the patients until discharged from the hospital.

- Transition and continuity to primary care. Both the IGCT assessment and recommendations were made available to primary health care providers in 13 French hospitals (92.9%), while one hospital did not communicate ether one or the other. Half of the Dutch hospitals (54.5%, n = 6) also communicated their assessment and recommendations to the primary health care provider. Three hospitals (27.3%) reported making both the assessment and recommendations available, while only two (18.2%) made the advices available to primary healh care providers.

Table 21 – Patient recommendations and follow-up by IGCTs

Survey item	France n = 14	The Netherlands n = 11
Number of teams reporting this item in their top 5 of most frequently made recommendations for consulted patients		
Mobility & falls, n	7	11
Care orientation & adjustment, n	14	3
Delirium, n	2	10
Cognition (general), n	9	2
Nutrition, n	9	2
Medication review & adjustment, n	3	5
Care planning, n	5	3
ADL activities/Functional status, n	7	0
Diagnostic tests, n	3	4
Social aspects, n	4	1
Pain management, n	3	1
Consultation by other professional, n	0	4
Dementia, n	1	2
Behavioural problems, n	3	0
Sensory system, n	0	1
IGCT recommendations for consulted patients		
IGCT recommendations based on guidelines/protocols, n (%)	4 (28.6)	8 (72.7)
Recommendations to CTU[1], n (%)		
Added to patient's file	13 (92.9)	10 (90.9)
Written/printed on paper	10 (71.4)	4 (36.4)
E-mail/electronically	5 (35.7)	2 (18.2)
Telephone contact with CTU	0 (0)	9 (81.8)
Direct communication with CTU	11 (78.6)	10 (90.9)
Attendance of CTU team meeting	0 (0)	8 (72.7)
Other	3 (21.4)	0 (0)
Implementation of recommendations, n (%)		
By CTU only	11 (78.6)	4 (36.4)
By IGCT only	0 (0)	1 (9.1)
Both by CTU and IGCT	3 (21.4)	6 (54.5)
Overall adherence by CTU as perceived by IGCT, n (%)		
Bad	0 (0)	0 (0)
Poor	0 (0)	1 (9.1)
Good	14 (100)	10 (90.9)
Excellent	0 (0)	0 (0)
Actions to improve adherence to the recommendations, n (%)	8 (57.1)	10 (90.9)
Patient follow-up by IGCTs		
In-hospital follow-up, n (%)		
Not provided	1 (7.1)	0 (0)
Only if requested by CTU	5 (35.7)	0 (0)
Automatically – until IGCT decides follow-up is no longer needed	4 (28.6)	10 (90.9)
Automatically - until hospital discharge	2 (14.3)	1 (9.7)
Communication to primary care, n (%)		
No communication	1 (7.1)	6 (54.5)
Results of patient assessment only	0 (0)	0 (0)
Patient recommendations only	0 (0)	2 (18.2)
Both assessment and recommendation	13 (92.9)	3 (27.3)

CTU = care team of the unit where the patient is hospitalized; 1 Categories are not mutually exclusive

Evaluation of IGCTs

Both in the Netherlands and in France, around half of the included hospitals (n = 5, 45.5%; n = 7, 50% respectively) used quality criteria to evaluate their IGCT. While only two hospitals (18.2%) drafted annual reports describing their IGCT performance in the Netherlands, almost all included hospitals in France (n = 12, 85.7%) did. Both countries additionally reported using different evaluation methods. One Dutch hospital reported using research projects associated with a university and one hospital used both internal evaluation meetings and meetings with colleagues from different hospitals. French hospitals reported evaluating their resource consumption (n = 1), the number of consultations requested and provided (n = 1), the number of geriatric assessments performed (n = 1), performing yearly audits (n = 1) and tracking the percentage of follow-up, rehospitalisation and adherence to recommendations at 2 months after hospital discharge (n = 1).

4.3.4 Semi-structured interviews with caregivers and researchers in the USA

4.3.4.1 Descriptions of the interviewees

Interviews were conducted with 4 key informants:

- Bruce Allen Leff, is a medical doctor at Johns Hopkins Bayview Medical Center, Professor of Medicine at the John Hopkins University School of Medicine, Director of the Center on Aging and Health-East, Director of the Program in Geriatric Health Services Research and co-Director of the Elder House Call Program. He was included for his expertise in geriatric medicine and primary care of older adults, and expertise on the development, evaluation and dissemination of care models for older adults. Specific contributions to geriatric care models have been the 'Hospital at Home' model of care, 'Guided Care', geriatric service line models and medical house call practices.
- Kenneth Covinsky is a medical doctor and Professor of Medicine of the UCSF Division of Geriatrics focusing on disability in older persons. He was included for his expertise in geriatric medicine and experience with 'Acute Care for Elders (ACE)' models.
- Michael Malone is a medical doctor at the Aurora Health Care Foundation and Professor of Medicine at the University Wisconsin School of Medicine and Public Health. He was included for his expertise in geriatric medicine and in the development, evaluation and dissemination of care models for older adults. Specific contributions to geriatric care models have been 'Nurses Improving Care for Healthsystem Elders (NICHE)', 'ACE Tracker' and 'E-geriatrician'. Furthermore, prof. Malone is the Geriatrics Models of Care editor for the Journal of the American Geriatrics Society, and published a book in August 2014 'Acute Care for Elders – A Model for Interdisciplinary Care'.
- Steven Counsell is a medical doctor at Wishard Health Services, founding director of Indiana University (IU) Geriatrics, of the John A. Hartford Foundation Center of Excellence in Geriatric Medicine and Professor and chair in geriatrics at IU School of Medicine. He was selected for his expertise in geriatric medicine and expertise in geriatric care models. In May 2015 he will be appointed president of the American Geriatrics Society. Specific contributions to geriatric care models have been the Geriatric Resources for Assessment and Care of Elders (GRACE) care management intervention.

4.3.4.2 Summary of the semi-structured interviews

Attitude towards geriatric health care

With respect to ageing, cultural differences are apparent between the USA and Europe. American citizens do not like to acknowledge the reality of ageing and do not accept government intrusion in healthcare services. Consequently, implementation of geriatric care models is not pressured by the government, but more dependent on the support of health administrators. Therefore, a strong business case is needed to realize the implementation and continuation of a specific geriatric care model, with a focus on profitableness, logistics and practicality. Other barriers noted were the shortage of geriatricians[153] and the persistence of certain myths (e.g. such as geriatric care prolonging the length of hospital stay and increasing costs). However, the attitude of hospitalists (i.e. physicians with a full time employment in the hospital) does seem to change when their contact with geriatricians increases. According to the interviewees, different geriatric care models have previously been implemented in the USA, but the evaluation of these models is almost always limited to research settings.

Geriatric consultation models

- Use of geriatric consultation models. The multidisciplinary geriatric consultation team or **'ACE consult model'** originated out of the ACE unit model, as some in-hospital patients required a more comprehensive baseline assessment, the management of complex geriatric problems and behavior, and a more complex discharge planning. However, consultation models are implemented in only a limited number of hospitals, the majority being academic, VA, and teaching or affiliated hospitals. Implementation of IGCTs has been largely dependent on research interests and willingness of a hospital to continuate IGCTs.
- Guidance for the use of geriatric consultation models. No legislative framework, standards or guidelines seem to exist with respect to geriatric consultation, according to the inteviewees.
- Barriers. An important barrier to the implementation of the IGCT model is the lack of effectiveness evidence, which could explain a shift towards co-management models. Another barrier might be financing, since reimbursement for IGCTs is limited and teams might not perform enough consultation services to generate adequate revenue for their hospital. Consequently, work-load might be very high aiming to generate enough income. IGCTs are financed by the hospital and healthcare system and pay the expenses of IGCT members. However, geriatric consultation can be billed under geriatric syndromes (e.g. delirium, falls) in Medicare. By diagnosing geriatric problems, which are commonly underdiagnosed, the ACE consult model can actually increase revenue for the hospital as additional diagnoses are billed. Also, the more complex the diagnosed problem, the higher the level of payment is.
- Composition and functioning of IGCT. Both at the Aurora Saint Luke's Medical Center (Prof. Malone) and the Johns Hopkins hospital (Prof. Leff) implemented IGCTs consists out of a geriatrician and geriatric nurse practitioner. At Johns Hopkins, the attending physician is also considered a member of the IGCT. At the Aurora Saint Luke's Medical Center, key interventions are defining geriatric problems, performing a comprehensive interdisciplinary assessment, organizing family meetings and patient discussions, determining the patient's goals of care and providing recommendations on specific geriatric syndromes. It is emphasized that these teams work complementary to the acute medical patient management and only focuses on geriatric management. Patients are seen around 1 to 10 times depending on their needs, with some being seen in follow-up as outpatients. For all patients, a telephone call to their general practitioner is performed. At Johns Hopkins, consultations are mostly provided on orthopedics and burn units. At the Aurora Saint Luke's Medical Center, three different selection methods exist to identify patients for geriatric consultation. First, the hospitalist who admits a patient can request a consultation on an as-needed basis (e.g. when the patient has delirium or another geriatric syndrome). Second, 'triggers' (e.g. delirium onset, a patient with challenging behaviour) based on the electronic health records registrations are used to automatically initiate an IGCT consultation. Third, the **'ACE tracker'**, a computer-generated checklist of all older patients in the hospital, is based on information from multiple areas of the electronic health records to identify vulnerable older patients at risk for geriatric syndromes, functional decline and poor outcomes. Internal evaluation of the IGCT at the Aurora Saint Luke's Medical Center has focused on caseload, length of stay and costs.
  Besides the 'ACE consult model', two other initiatives related to geriatric consultation were implemented at the Aurora Health Care Foundation associated hospitals. First, the aforementioned ACE Tracker can also be used during regular teleconferencing consultations, in which off-site geriatricians provide geriatric expertise to smaller rural hospitals *(**e-Geriatrician**)*.[157] Second, **Most Difficult Case Conferences** are organized and include telephone discussions and educational sessions in which colleagues review their most complex patient cases within an interdisciplinary team meeting, in order to discuss the biological, psychological and social needs of the patient and make subsequent recommendations for patient care.

Alternative care models for hospitalized older patients

Below, several geriatric care models are described that, according to the interviewees, could be an alternative for the IGCT model:

- Acute Care for Elders (ACE) units were first implemented in the 1990's, but have been largely abandoned due to several reasons. First and most notably, a staffing shortage of geriatric trained healthcare professionals was a major barrier for the model's continuation, since the promising research results could not be realized in daily practice.[153] To date, some hospitals still have ACE units, but these units tend to be small and serve only a minority of patients. It is estimated that between 100 and 200 of the over 5500 acute care hospitals in the USA have an ACE unit.[153] Second, ACE units were also discontinued due to practical barriers at the hospital level. Structural problems arise when using a dedicated unit for a specific patient population (e.g. older frail patients): hospitals want to admit all patients, but are faced with a limited number of beds. Therefore (for example), an adult with pneumonia could be admitted to an ACE unit because all other beds are already occupied. Alternatively, a frail older person might be admitted on an internal medicine unit because all beds in the ACE unit are taken. Thus, having a dedicated care unit in a hospital for frail older persons at maximum capacity provides logistic challenges. Third, a key principle to the potential success of ACE units is proactive management of geriatric syndromes. However, in daily practice it was observed that patients were only admitted to ACE units several days after initial hospital admission. By that time, geriatric problems (e.g. delirium, malnutrition) are often already manifestly present undermining the effectiveness of this unit-based model. A fourth challenge of the ACE unit model is related with the financial structure of Medicare. Medicare is a health system that finances and reimburses care for older people, but it is largely disease-focused and aims to prevent hospital readmissions rather than to support medical reconciliations (e.g. for geriatric syndromes). Medicare bases its financing structure on Diagnosis Related Groups (DRG): a certain budget is provided for a specific medical diagnosis (i.e. a DRG). Consequently, when a patient is admitted, Medicare will only pay that set amount for the patient's billed DRG, which provides a strong incentive to decrease length of hospital stay. This explains why ACE units were first popular, as preliminary evidence showed that they decreased LOS by preventing functional decline. However, to date LOS has shortened significantly for older patients, as they are often transferred to a Sub-acute Nursing Facility (SNF) before going home. For instance, at IU Health West a mean length of stay of 5.42 days was observed for all patients aged 75 years or older. The financing of SNF care is regulated by a separate payment system, and hospitals can benefit from organizing a SNF in their own facility. If they can realize a rapid patient discharge (e.g. faster then paid for according to the DRG, resulting in financial gains less costs were made than expected according to the DRG), they receive the DRG payment, supplemented with the daily payment for the SNF. The incentive to prevent readmissions is augmented by the fact that hospitals are fined in case a patient is readmitted within 30 days. To conclude, to date's organization of Medicare is not stimulating nor recommending the implementation of ACE units to provide geriatric expertise.
- The Hospital Elder Life Program (HELP) focuses on the prevention and treatment of delirium, in order to avoid functional and cognitive decline in older patients during hospitalisation. All patients aged 70 years or older are screened for six risk factors on admission (e.g. cognitive impairment, sleep deprivation, immobility, dehydration, vision and hearing impairment). Targeted interventions for these risk factors are implemented by an interdisciplinary team, including a geriatric nurse specialist, Elder Life Specialists, trained volunteers, and geriatricians working in close collaboration with primary nurses. Other experts provide consultations during twice-weekly interdisciplinary rounds.[158]
- Two models, primarily focusing on geriatric nursing care, are the Nurses Improving Care for Health System Elders (NICHE) program and the Geriatric Resource Nurses (GRNs). The NICHE program offers resources to strengthen nurses' individual geriatric expertise and to improve a hospital's capacity to develop, implement and evaluate best-practice geriatric care.[159] The implementation of GRNs has been limited, mainly due to the shortage of geriatric trained nurses. Moreover, GRNs were often consulted to cure rather than to prevent geriatric problems, undermining the key principle of proactive care and leading to job dissatisfaction among GRNs. Ideally, a collaboration between an ACE unit and GRNs should be established, in which primary nurses can

be trained to provide geriatric care, and GRNs should be available on other units to collaborate with the ACE consult team.

- Based on the limited evidence regarding effectiveness of consultation-based geriatric care models, an increasing interest has been noted in geriatric co-management models. These models are described as: 'the availability of joint expertise of geriatricians and mediscal specialists working together in patient care, with shared responsibility for care management and clinical outcomes'.[22] Co-management teams typically include a geriatrician and/or a nurse practitioner trained in geriatrics, who identify common geriatric problems, and perform transition planning. A key difference with consultation models is that patient care is co-managed together with an acute medical care discipline: i.e. by using written orders and direct interventions, instead of solely making non-mandatory recommendations based on a consultation request. As they work pro-active and complementary to acute medical care, the aim is to support the overall care provided by hospitalists. The geriatric team members bring added resources, assistance, time and geriatric expertise to patient management and provide a relief of burden for the hospitalists. In the USA, geriatric co-management models are currently only implemented at a regional level and appear to be most commonly implemented in orthopedics and cardiology, as treating physicians are often busy performing surgery. On the other hand, physicians like to manage their own patients and may therefore experience apprehension tounits the shared responsibility for patient care aplied in co-management models. In Johns Hopkins hospital for instance, the co-management model is focused on older people with a geriatric profile and fracture on orthopedic units. At the IU Health Methodist Hospital, acutely ill patients aged 65 or older, admitted from home or assisted living to a general unit and having one or more of the following criteria are seen by the ACE consult team: (1) 85 or older; (2) cognitive impairment;(3) functional decline. Request for intervention of the ACE-consult team preferably comes within 72 hours of admission from the treating physician. Findings and recommendations are communicated directly to the referring physician and co-management is provided as desired. Transition planning will be initiated immediately and coordinated with the primary care physician.[90] Outpatient geriatric follow-up will be provided post-discharge if needed or people discharged can be enrolled in the GRACE program (see next paragraph).

  Three reasons for the potential success of the geriatric co-management model were stated by the interviewees. First, the *productive use of geriatricians* is an advantage: the geriatrician can concentrate on specific patients with complex geriatric problems, thereby working complementary to acute medical care. Second, it is possible to provide *proactive care*, as geriatric co-management models are mostly developed for populations with a known high susceptability for geriatric syndromes and functional decline (e.g. hip-fracture, cardiology). Third, the model aims at geriatricians *teaming up* with medical specialists, which enables a culture of 'helping medical specialists' rather than 'finger pointing out' mistakes.

Models for primary care

Two geriatric care models mentioned by the interviewees are primarily based in the primary-care setting, but nevertheless have a clear link with hospital care:

- GRACE, pioneered by prof. Counsell, is a model to improve quality of geriatric care for low-income seniors in the primary-care setting. Thereby, it aims to optimize health outcomes and functional status, to decrease excess healthcare use, hospital admissions and to prevent long-term nursing home admissions.[160] The model consists of nurse practitioners and social workers trained in geriatrics, collaborating with general practitioners and performing home visits. To date, GRACE has only been implemented by a limited number of hospitals. An evaluation of the model at Indiana University Health – West hospital, comparing data of January to June 2013 with data of January to June 2014, indicated an increased patient, family, nurse and physician satisfaction; an improved quality of care for geriatric conditions; the avoidance of healthcare acquired conditions (e.g. adverse drug reactions); an improved DRG payment; a reduced LOS; lower hospital costs and fewer 30-day readmissions.

- Hospital at Home was pioneered by prof. Leff in the 90's, aiming to prevent hospitalisation in acute medical settings. Patients suitable for the Hospital at Home intervention are identified in the emergency department or outpatient clinic, based on the complexity of their medical problems and social environment/support. At their own home, patients are evaluated by a hospital-at-home physician, and a nurse provides one-on-one supervision for an initial period of at least 8 – 24 hours. When direct supervision is no longer indicated, the patient receives daily intermittent visits, and both diagnostic and therapeutic medical equipment is provided.[161] This model of care has been evaluated for its effectiveness, feasibility, stress of family caregivers, patient satisfaction and financial implications.[161-163]

Key points on Inpatient Geriatric Consultation Teams (IGCTs)

Scope of implementation

- **Apart from Belgium, widespread implementation was only found in France and the Netherlands.**
- **Although many care models for geriatric patients (including IGCTs) originate from the USA, their implementation on a national level has been very limited in this country.**

Care model that faces several barriers

- **Major barriers include lack of adherence to care-related recommendations, lack of evidence on effectiveness and resource constraints.**
- **Problems regarding adherence to recommendations were most often mentioned in studies on IGCTs with a solely advisory role. Other team-based CGA models, i.e. geriatric co-management, could therefore be considered.**

Considerable heterogeneity

- **Heterogeneity between studies and countries with respect to IGCT composition and activities was evident. However, nurses (with geriatric competencies or advanced practice skills) and geriatricians were often considered core team members.**
- **Heterogeneity regarding procedures for patient selection and screening was found, with no widespread use of international validated screening instruments. Based on a literature review most IGCTs only assessed a limited number of topics/items within each dimension of CGA, contradicting the survey results which showed that all domains and their subitems were assessed by the majority of the included IGCTs.**

Quality of care

- **Although using quality indicators to evaluate the quality of IGCT care has been advised and exist in France, there is limited evidence on its use by included IGCTs.**

5 QUALITY CRITERIA FOR THE EVALUATION OF INPATIENT GERIATRIC CONSULTATION TEAMS

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5.1 Introduction

IGCT was first introduced in the Belgian health care setting by means of a Royal Decree in 2007.[164] Despite the absence of strong evidence concerning its clinical effectiveness,[14, 17, 22] the NRZV/CNEH judged the IGCTs, having a high face validity, necessary to meet the demands of the increasing number of hospitalized patients with a geriatric risk profile in Belgium. The Minister of Public Health was advised to consolidate 'the inpatient liaison pilot-projects' and provide a structural payment for IGCTs based on the number of patients aged 75 years or older admitted to the hospital. In support of this, the geriatric college of physicians advised to develop quality criteria relevant for the teams. In this chapter we describe *the literature that could be used as minimum standards to evaluate the quality of care delivered by IGCTs'*. In addition, we will describe some of the current and past quality indicator initiatives that can be used as starting point when policy makers decide to develop a set of indicators to evaluate the quality of care for geriatric (hospitalized) patients.

5.2 Methodology

A scoping literature review was used to identify all relevant papers using the same search strategy as described in chapter 4.(See 4.2.1) However, some small methodological changes were made and are detailed in the next section. In addition, an ad-hoc search for current and past initiatives was performed, using the researcher's professional network and based on expert input.

5.2.1 Scoping review

Identification of the research aims

The initial research aim focused on identifying validated quality indicators for the evaluation of IGCT care models. As the first results indicated that quality indicators concerning IGCT care models were scarce and validation was lacking, the research scope was broadened to non-validated quality indicators for the in-hospital care of geriatric patients. This resulted in a revised research aim, i.e. '*to develop a list of quality criteria for the care of patients with a geriatric profile that fit within the scope and objectives of IGCTs. These quality indicators should represent minimal standards that if not met, usually indicate poor quality of care by IGCTs'*. It was, however, beyond the scope of the current study to develop and test the operational definitions of such quality indicators

Identification of relevant papers

To identify peer-reviewed literature, the same search strategy was used as for the literature on the international context of IGCTs (see 4.2.1). For the grey literature regarding IGCT and potential quality indicators for geriatric care the selection of sources was based on a priori drawn up list by the research team, and on additional sources (e.g. websites and databases) identified in the database search and through contact with international colleagues and representatives of professional organisations for geriatrics and gerontology in a selection of countries (Australia, Finland, France, Germany, Sweden, The Netherlands, UK, US) between 11 June 2014 and 07 July 2014. Specifically, OAIster, OpenGrey, OpenAire and Google Advanced Search were consulted for relevant publications published between 01 October 2000 and 19 September 2014 Search terms for Google Advanced for detection of Dutch publications in the Netherlands included 'geriatrisch', 'geriatrie', 'ouderenzorg', 'ouderengeneeskunde', 'medebehandeling', 'consultatie', 'liaison', and 'kwaliteitsindicator'. Search terms for detection of French publications in France included 'gériatrie', 'soins gériatrique', 'soins aux personnes âgées', 'corresponsable de traitement', 'consultation', 'liaison interne gériatrique' and 'indicateur qualité'.

Selection of relevant papers

To guide the decision on initial in- and exclusion criteria for study selection the research aim was broken down into a PICO format. The selection criteria were further refined during the study selection process. (Table 23) The selection process was identical to that described before (See 4.2.1).

Table 22 – PICO format of research aim and applied selection criteria

PICO	Applied PICO	Inclusion criteria	Exclusion criteria
Population	Older hospitalized patients	• Hospitalized patients • Patients aged ≥ 65 years	• Outpatient setting (including day care hospital) • Residential care setting • Community care setting, except for ACOVE quality indicators applicable to inhospital care
Intervention	n/a	n/a	n/a
Comparison	n/a	n/a	n/a
Outcome	Quality criteria for the care of patients with a geriatric profile that fit in with the scope and objectives of IGCTs. These criteria can be situated on the structure, process or outcome level [165]	Quality criteria/indicators that can be used evaluate the in-hospital care for geriatric patients and are potentially applicable to IGCT.	
Study design and full text availability	n/a	• Experimental research (randomized or non-randomized controlled trials (RCT/nRCT), pre-post implementation studies) • Descriptive research • Grey literature (e.g. law, guidelines, research reports)	• Review designs • Published abstracts • Papers of which full text is not available
Language	n/a	• English, Dutch, French	n/a
Publication date	n/a	• Published between 01 January 1999 and 30 June 2014	n/a

Data charting

IGCT related quality indicators were hypothesized to mainly focus on the process of care, rather than its outcome, as there is currently insufficient evidence for the clinical effectiveness of IGCTs, and because the separate effects of frailty, age, comorbidities and treatment on outcomes in a geriatric population are difficult to distinguish.[22] However, quality indicators on the outcome level were not a priori rejected for this study. The development of the data charting format was identical to the process used in chapter 4. (See 4.2.1) The final version of the data chart format included the reference number of the paper, complete reference, source of reference, the aim(s), the study setting and population, the set of criteria (if the quality criterion/indicator is part of a broader set of criteria), development method, domain and subdomain, definition of quality indicator and comments.

To determine which quality indicators would be selected for the final long list of quality indicators, a list of all quality indicators published in the included papers was composed first. In a first round, each indicator was independently scored as 'relevant or relevant after rephrasing' or 'not relevant' for the evaluation of IGCTs by two researchers with extensive experience in geriatric care. A meeting was then organized allowing both researchers to discuss their respective scores and to re-evaluate each quality indicator based on valid arguments. All indicators rated 'not relevant' by both researchers were excluded from the long list. Thus, all indicators that were scored 'relevant' or 'relevant after rephrasing' by at least one of the two researchers were in a long list of potentially relevant quality indicators. To facilitate the elimination of duplicates, the remaining indicators were categorized into 22 different domains, i.e. cognition, continuity and coordination of care, delirium, dementia, depression, falls and mobility problems, functional status, hearing and vision, medication, osteoporosis, pain, pressure ulcers, screening, sleep disorder, substance abuse, nutrition, urinary incontinence, recommendation, team composition, patient characteristics, IGCT activity, and other outcomes. All duplicate and redundant quality indicators among the different domains were removed by one researcher, resulting in a long list of possible quality indicators. (Appendix 12)

Sorting, summarizing and reporting of results

The result for this research aim was a 'long list' of quality criteria/indicators that fit in with the scope and objectives of IGCTs. Forward translation to English of quality indicators published in Dutch and French was done by a member by the research team. This list was structured according to criteria's/indicator's (sub)domain, operational definition, and method of development. Selected quality criteria were categorized according to the domains of quality of care defined by Donabedian (structure, process, outcome) [165] and the quality dimensions as defined in previous KCE-reports[166, 167]:

- Safety: 'the degree to which the system has the right structures, renders services, and attains results in ways that prevent harm to the user, provider, or environment';
- Effectiveness: 'services based on scientific knowledge to all who could benefit, and refraining from providing services to those not likely to benefit';
- Appropriateness: 'the degree to which provided healthcare is relevant to the clinical needs, given the current best evidence';
- Patient centeredness: 'care that is respectful of and responsive to individual patient preferences, needs, and values';
- Timeliness: 'reducing waits and sometimes harmful delays';
- Efficiency: 'the degree to which the right level of resources (i.e. money, time and personnel) is found for the system (macro-level) and ensuring that these resources are used to yield maximum benefits or results (i.e. allocative efficiency)';
- Equity: 'the level of care does not vary in quality because of personal characteristics. This term covers physical access (geographical distribution), costs, time, cultural access (e.g. religion), psychological access and availability of qualified personnel';

5.3 Results

5.3.1 Identification and selection of relevant papers

After removal of duplicates (n = 1 156), the database and hand search resulted in 7 206 potentially relevant papers regarding the international context of IGCTs and/or quality criteria for the evaluation of IGCTs (chapters 4 and 5). Of those, 6 858 papers were excluded based on their title and abstract and 324 for RA2 (chapter 5) after full-text evaluation. The database and hand search resulted in the inclusion of 24 papers, of which 14 were retrieved through databases searches[168-181] and 10 [182-191] through hand searching.

A grey literature search resulted in the inclusion of fifteen relevant documents[131, 132, 140, 141, 144, 192-201] This resulted in the inclusion of 39 papers and reports publishing quality indicators that are potentially relevant to evaluate IGCTs.(Appendix 4)

5.3.2 Study characteristics

The majority of the papers (n = 19) originated from the USA, 14 of those being part of the original ACOVE-3 set.[168-173, 182-189] The first set of **Assessing Care Of Vulnerable Elders (ACOVE)** quality indicators was developed in 1999 aiming to measure the quality of care provided to *vulnerable older people*. The Vulnerable Elder Survey (VES)-13, a set consisting of 13 questions posed during a brief interview and resulting in a score ranging from 0 to 10, was used to determine which patient is considered vulnerable.[202] Patients with a VES-13 score of 3 or higher were defined as 'vulnerable elder' as their risk for functional decline or death was 4.2 higher compared to patients with a VES-13 score of less than 3.[202]

In 2001, the ACOVE QIs were updated because of challenges interviewing some patients groups, i.e. cognitive impaired patients. The ACOVE investigators reviewed the full set of QIs and found that all QIs were applicable to patients aged 75 years or older. A complete revision was completed in 2006 which resulted in the ACOVE-3 set covering 26 conditions and 392 QIs.[203] For each of the 26 conditions an individual paper was published with relevant quality indicators for the specific condition. Although the ACOVE quality indicators were originally designed for community-dwelling older people, part of the indicators are also applicable for hospitalised patients. After reading all 26 full papers, we selected fourteen papers on geriatric conditions and syndromes with quality indicators potentially relevant for the evaluation of IGCTs. (Table 23) The excluded ACOVE-3 conditions were: benign prostatic hyperplasia, breast cancer, chronic obstructive pulmonary disease, colorectal cancer, diabetes mellitus, end-of-life care, heart failure, hypertension, ischemic heart disease, medication use, osteoarthritis, stroke and atrial fibrillation.

The other papers originated from Australia (n = 4), Canada (n = 3), the Netherlands (n = 9), France (n =3) and the United Kingdom (n = 1). Two papers published QI for ED care, and three papers had a combination of hospital and community care QI. Except for thirteen papers, all included documents were published in English. The nine grey documents from the Netherlands were all published in Dutch; the IGCT related legislation, a conference paper and a national research report from France, and one of the three Canadian papers were published in French.

Table 23 – Overview of the characteristics of included studies

Country	Study	Setting	Aim of the paper	Development of quality indicator		Number of QIs published	Publication language
USA	Wenger et al. (2007)[173]	Community care	To demonstrate supporting evidence of the selected QIs regarding continuity and coordination of care	1. Literature review For each condition a content expert developed potential QIs after reviewing prior ACOVE QIs and other guidelines. For each potential QI a systematic literature review was conducted. The content expert created a monograph for each QI in the if-then-because format, which were subject to peer review. 2. Expert panels The expert panel consisted of 2 general internists, 2 geriatricians and other experts depending on the condition considered, with a total of 8 to 12 panellists. Panellists participated in a modified RAND/UCLA Appropriateness Method. This includes two rounds of anonymous ratings on a risk-benefit scale from 1	Literature review based on 1994 articles. The expert panel process judged 16 of the 17 potential QIs to be valid.	16	English
	Feil et al. (2007)[182]	Community care	To demonstrate supporting evidence of the selected QIs regarding dementia		Literature review based on 357 articles. The expert panel process judged 16 of the 22 potential QIs to be valid and added 1.	17	English
	Nakajima & Wenger (2007)[183]	Community care	To demonstrate supporting evidence of the selected QIs regarding depression		Literature review based on 173 articles. The expert panel process judged 19 of the 20 potential QIs to be valid and added 1.	20	English
	Chang et al. (2007)[168]	Community care	To demonstrate supporting evidence of the selected QIs regarding falls and mobility problems		Literature review based on 182 articles. The expert panel process judged 12 of the 15 potential QIs to be valid.	12	English
	Yueh & Shekelle (2007)[172]	Community care	To demonstrate supporting evidence of the selected QIs regarding hearing loss.		Literature review based on 106 articles. The expert panel process judged 7 of the 10 potential QIs to be valid.	7	English
	Arora et al. (2007)[174]	Community care	To demonstrate supporting evidence of the selected QIs regarding hospital care and surgery (postoperative).		Literature review based on 485 articles. The expert panel process judged 30 of the 35 potential QIs to be valid.	20	English
	Grossman & MacLean (2007)[185]	Community care	To demonstrate supporting evidence of the selected QIs regarding osteoporosis.		Literature review based on 590 articles. The expert panel process judged 13 of the 19 potential QIs to be valid.	13	English
	Etzioni et al. (2007)[186]	Community care	To demonstrate supporting evidence of the selected QIs regarding pain management.		Literature review based on 200 articles. The expert panel process judged 8 of the 11 potential QIs to be valid.	8	English
	Bates-Jensen & MacLean (2007)[184]	Community care	To demonstrate supporting evidence of the selected QIs regarding pressure ulcers.		Literature review based on 281 articles. The expert panel process judged 13 of the 15 potential QIs to be valid.	13	English
	Gnanadesigan et al. (2007)[170]	Community care	To demonstrate supporting evidence of the selected QIs regarding screening and prevention.		Literature review based on 428 articles. The expert panel process judged 17 of the 20 potential QIs to be valid.	17	English
	Martin et al. (2007)[171]	Community care	To demonstrate supporting evidence of the selected QIs regarding sleep disorders.		Literature review based on 481 articles. The expert panel process judged 10 of the 13 potential QIs to be valid.	10	English

Country	Study	Setting	Aim of the paper	Development of quality indicator		Number of QIs published	Publication language
	Rueben et al. (2007)[187]	Community care	To demonstrate supporting evidence of the selected QIs regarding under nutrition.	to 9, and a face-to-face group discussion. All QI with panel disagreement were rejected.	Literature review based on 116 articles. The expert panel process judged 9 of the 16 potential QIs to be valid.	9	English
	Fung et al. (2007)[169]	Community care	To demonstrate supporting evidence of the selected QIs regarding urinary incontinence.		Literature review based on 348 articles. The expert panel process judged 14 of the 15 potential QIs to be valid and added 1 from BPH.	9	English
	Rowe & MacLean (2007)[189]	Community care	To demonstrate supporting evidence of the selected QIs regarding vision.		Literature review based on 119 articles. The expert panel process judged all of the 11 potential QIs to be valid. One was moved to diabetes mellitus.	10	English
	Arora, McGory et al. (2007)[188]	Hospital care	Adapt ACOVE process-of care quality measures for use in hospitalized older persons. Use these to evaluate hospital care in a sample of hospitalized vulnerable elderly medical patients.	A team of 5 geriatricians and 2 academic hospitalists reviewed the 71 ACOVE QIs referring to hospital care for their ease of operationalizing into medical record chart review and applicability to the clinical hospital services. QIs referring to conditions not routinely admitted to general medicine service, low likelihood of meaningful variation, too costly to measure on large scale, presumed low rates of eligibility in the patient population and too difficult to operationalize using chart review only, were excluded. Eligible QIs were operationalized by developing process-of-care measures using an iterative process with an emphasis on teaching a reviewer how to find this material in a medical record. Research team reviewed weekly during 6 weeks until consensus was reached regarding face and content validity.		16	English
	McGory et al. (2009)[179]	Hospital care	To develop process-based quality indicators to improve perioperative care for elderly surgical patients.	Modified RAND-UCLA Appropriateness Methodology: 1. Identification of candidate QI for elderly surgical patients using literature review and semi-structured interviews with nationally recognized thought leaders. 2. Systematic review to identify the highest level of evidence per QI. 3. Expert panel with all 13 experts individually rating all QIs on a 1 to 9 validity scale. 4. Face to face expert panel meeting and a subsequent rerating of the QIs.		56*	English
	Terrell et al. (2009)[180]	Emergency care	To develop ED specific quality indicators for older patients to help practitioners identify quality gaps and focus quality improvement efforts.	The Society for Academic Emergency Medicine (SAEM) Geriatric Task Force selected three conditions identified as having quality gaps in the care of older patients: cognitive assessment, pain management, and transitional. For each condition, a content expert created potential QIs based on a systematic review of the literature, supplemented with expert opinion when necessary. The original candidate QI was modified in response to an evaluation made by the Task Force, the SAEM Geriatric Interest Group, and audiences at the 2007 SAEM Annual Meeting and the 2008 American Geriatrics Society Annual Meeting.		14	English
	American Geriatrics Society[201]	Community + hospital care	No specific research aim stated	Developed by the American Geriatrics society, the National Committee for Quality Assurance and the physician Consortium for Performance Improvement. The development process was not reported.		9	English

Country	Study	Setting	Aim of the paper	Development of quality indicator	Number of QIs published	Publication language
	JCI - International Hospital Inpatient Quality Measures[192]	Hospital care	The initiative aims to refine and standardize hospital data, data transmission, and performance measures in order to construct one robust, prioritized, and standard quality measure set for hospitals.	The development process was not reported.	4	English
Australia	Brand et al. (2011)[177]	Hospital care	To report the study protocol for the development of aged care outcome oriented QI for acute care hospitals.	1. Development of preliminary QIs set based on a literature review and expert panel consultation. 2. Prospective field study 3. Analysis and compilation of definitive QIs, including 2 anonymous voting rounds for QI inclusion by the expert panel.	10	English
	Loh et al. (2000)[178]	Hospital care	To outline the strategies used in the department of Geriatric Medicine at Royal Perth Hospital (RPH). To report and improve the quality of care by measuring 2 QI in 55 patients admitted to one unit in RPH.	Developed by the Royal Australian College of Physicians in junction with the Australian Council of Health Care Standards (ACHS). The development process was not reported.	2	English
	Tropea et al. (2011)[181]	Hospital care	The study aimed to develop a set of clinical indicators to minimise the risk and adverse outcomes of functional decline in older hospitalised people.	Existing Australian and international clinical indicators relevant to cognition and emotional health, mobility, vigour and self-care, continence, nutrition, skin integrity, person-centred care, assessment and medication management were identified by literature and electronic website review. A multidisciplinary expert advisory group used modified Delphi methods, including two anonymous voting rounds and a group discussion, to gain consensus for a prioritised set of clinical QIs. For each QI, experts voted on a scale of 1 (low level of prioritisation) to 9 (high level of prioritisation) based on measurement attributes and utility for use at the level of clinical teams, hospital managers and jurisdictional policy makers.	19	English
	The Australian Council on Healthcare Standards (2011)[190]	Community + hospital care	To provide a national perspective on the largest clinical indicator data set for the Australasian healthcare system. The indicator sets consists of 22 domains.	The clinical QIs were developed by working parties comprised of practising clinicians (medical officers, nurses, allied health professionals in the relevant specialty field), representatives of the relevant Australian and New Zealand colleges / associations / societies, consumer representatives, statisticians and ACHS staff. Each working party met 3 to 4 times reviewing the existing QIs and exploring areas for new QIs. The revised version of the QI set was endorsed by each of the relevant colleges, associations and societies prior to implementation into the collection.	12[£]	English

Country	Study	Setting	Aim of the paper	Development of quality indicator	Number of QIs published	Publication language
Canada	Kroger at al. (2007)[176]	Community + hospital care	Evaluating the face and content validity, feasibility and reliability of process quality indicators.	A total of 33 clinical experts from 3 major urban centres in Quebec formed a panel representing family medicine and geriatrics and 7 health or social services specialties (nursing, occupational therapy, psychology, neuropsychology, pharmacy, nutrition, social work). A modified RAND/UCLA appropriateness method, a two-round Delphi panel, was used to assess face and content validity of process QIs. The appropriateness of QIs was evaluated according to a) agreement of the panel with three criteria, defined as a median rating of 7–9 on a 9-point rating scale, and b) agreement among panellists, judged by the statistical measure of the interpercentile range adjusted for symmetry. Feasibility of quality assessment and reliability of appropriate QIs were evaluated within a pilot study on 29 patients affected by cognitive impairment or dementia.	73	English
	Payot et al. (2007)[175]	Hospital care	To analyse and adapt a set of quality indicators for assessment and management of patients with cognitive disorders, which are seen very frequently in geriatric assessment units in Quebec.	From among the QIs developed in 2001 using the RAND method, 22 items selected for their relevance to evaluation and management of cognitive disorders were adapted to clinical practice in the Quebec hospital system. These QIs, along with evidence from the literature, were submitted to a panel of experts. The experts were asked to rate, on a scale of 1 to 9, their level of agreement with the QI in terms of validity and their need to be recorded in patients' medical charts. For a QI to be retained, it had to be accepted according to its median value, to be rated in the upper third of the scale, and to be approved by the panellists. QIs not accepted at first were modified according to experts 'comments and then resubmitted to the same panel for a second round.	22	French
	Liu B. (2013)[200]	Hospital care	To identify metrics for ongoing monitoring and evaluation of delirium and functional decline practices.	A literature review and environmental scan of Ontario's hospitals identified a large array of potential QIs. Subsequently, a Delphi panel and multiple consensus meetings engaged clinical, academic, administrative, and decision support leaders from across the province in a collaborative effort to reach consensus on accountability indicators to submit for recommendation.	4	English
UK	Department of Health Urgency and Emergency Care[191]	Emergency care	To set out best practice guidance for the presentation and publication of the A&E clinical quality indicators. A&E sites following this guidance will ensure that locally published information on the indicators provides an accurate, transparent and comparable reflection of their performance.	The Operating Framework for the NHS in England 2011/12 announced that a set of clinical QIs would be introduced to provide a comprehensive and balanced view of the care delivered in A&E. These QIs have been developed by the National Clinical Director for Urgent and Emergency Care, working with the College of Emergency Medicine, the Royal College of Nursing and informed lay representatives.	8	English

Country	Study	Setting	Aim of the paper	Development of quality indicator	Number of QIs published	Publication language
The Netherlands	Nederlandse Vereniging voor Klinische Geriatrie (2013a)[193]	Hospital care	**Internal** To improve professional care by internal evaluation. **External** To differentiate with other medical professionals caring for older people. To make transparent and evaluate care by the geriatrician.	Based on a number of brainstorming sessions, the project group compiled a list of topics eligible for quality improvement, which was concretized and defined in a number of meetings. In the final stage a final s selection was made from the previously selected indicators. An extensive literature search was done to gather evidence base for each indicator. There was often insufficient evidence, and the QI was developed based on expert opinion.	27	Dutch
	Nederlandse Vereniging voor Klinische Geriatrie (2013b)[132]	Hospital care	Rationale, optimisation and quality improvement of geriatric hospital care in patients for whom the geriatric team has been requested for consultation or co-management.	This guideline was developed in accordance with the AGREE 2 instrument. An expert group, consistent out of geriatricians, internal geriatric physicians, and geriatric nurses drafted this guideline during a 2 year period.	4	Dutch
	Senior Friendly Hospital (SFH) [140]	Hospital care	To develop a quality label for hospitals that adapted the organisation of care and services to the needs of (vulnerable) older persons.	Several research methods were used to compile a list of QIs: a limited literature search; 16 semi-structured interviews with (vulnerable) older persons and care givers; a focus group with care givers; a questionnaire completed by 457 respondents (290 older patients and 167 relatives). Based on this information a list of 15 QIs was prepared in collaboration with research center Medi Quest, an expert commission Medici, an expert committee 'elderly' and a committee of recommendation.	15	Dutch
	CSO (2008)[199]	Hospital care	To define and state quality criteria for geriatric care concerning delirium and to promote these criteria to care professionals and health care insurance agencies.	A literature review was performed and a group of care professionals and patients and their informal caregivers were consulted. Two focus groups were held, questioning criteria relevant for the care of delirious patients. These methods resulted in a long list of QIs. A Delphi study was then performed which was followed by a consensus meeting to determine the final list of QIs.	47	Dutch
	Te Velde & Betten (2011)[195]	Hospital care	To determine if specific delirium related QIs can have a broader application for frail older people.	First, a literature review was performed to determine QIs for the care of delirious patients. A focus group was then performed discussing the drafted QIs. Next, a Delphi study was performed testing the provisional list of QIs resulting in the final list of published QIs.	19	Dutch
	Inspectie voor de Gezondheidszorg (IGZ) (2014)[196]	Hospital care	To determine which care processes within a hospital requires further in-depth investigation.	The 'Inspectie voor de Gezondheidszorg' after meeting with professional care organisations published the QIs.	50	Dutch
	CZ zorgverzekering[194]	Hospital care	To address the question as to how to offer optimist care to vulnerable	The development process was not reported.	19	Dutch

Country	Study	Setting	Aim of the paper	Development of quality indicator	Number of QIs published	Publication language
			older people during and after hospitalisation.			
	VMS (2009)[131]	Hospital care	To prevent functional decline in patients 70 year and older when admitted to a hospital because of complications.	The QIs were drafted based on the available literature, published guidelines and QIs and personal experience with quality improvement projects.	17	Dutch
	Verenso[197]	Hospital care	To improve the quality of geriatric rehabilitation care and provide a benchmark for comparison.	Published results were analyzed and summarized. These results were compared to published guidelines and QIs. This resulted in a longlist of QIs. Next, discussions were held concerning in- or exclusion, or rephrasing of QIs.	7	Dutch
France	Ministère de la Santé et des Solidarités (2007)[144]	Hospital care	No specific research aim stated	The development process was not reported.	4	French
	Rouseau & Bastianelli (2005)[141]	Hospital care	The Secretary of State for older persons requested studying the functioning of mobile geriatric teams within the continuum of care, emphasizing the description of the various organisations, and possible of QIs to evaluate the activities and quality of the delivered services.	The development process was not reported.	33	French
	Montalan (2011)[198]	Hospital care	This article provides a tool for the evaluation of the intangible capital of particular hospital organisations, the Mobile Geriatrics Teams.	The development process was not reported.	29	French

*QI = quality indicator; * = selection of QI for non-elective inpatient surgery only; £ = indicators from 2 domains only, i.e. hospital wide and internal medicine*

5.3.3 Selection of quality indicators

In the 39 papers included through the database, hand and grey literature search (Table 23), a total of 681 quality indicators were initially included. After the first evaluation round conducted by two researchers scoring each quality indicators as 'relevant or relevant after rephrasing' or 'not relevant' for the evaluation of IGCTs, and the removal of all indicators rated as 'not relevant' by both researchers, 233 quality indicators remained. To facilitate elimination of duplicate indicators these remaining quality indicators were categorized into **21 different domains** (n = number of quality indicators):

- Cognition (n = 9): e.g. percentage of admissions to a geriatric unit that have an assessment of cognitive function;
- Continuity and coordination of care (n = 41): e.g. percentage of patients for whom the 4 axes (somatic axis, psychological axil, social axis, and functional axis) of the comprehensive geriatric care are described in the the letter to the referrer;

- Delirium (n = 18): e.g. percentage of patients (65 and older) receiving delirium screening using a validated tool upon admission to hospital;
- Dementia (n = 13): e.g. percentage of vulnerable older persons with dementia that are screened for depression during the initial evaluation;
- Depression (n = 3): e.g. percentage of vulnerable with a newly diagnosed depression episode for which the medical record documents on the day of diagnosis the presence or absence of suicidal ideation and psychosis;
- Falls and mobility problems (n = 14): e.g. fall incidents during hospitalisation ;
- Functional status (n = 17): e.g. percentage of patients (65 and older) receiving assessment of activities of daily living function with a validated tool at both admission and discharge;
- Hearing and vision (n = 3): e.g. percentage of vulnerable older persons that have an evaluation of hearing status as part of the initial evaluation;
- IGCT activity (n = 18): e.g. time to initial assessment;
- Medication (n = 8): e.g. percentage of vulnerable older persons with a medication review;
- Nutrition (n = 12): e.g. percentage of patients 65 years of age and older for whom evaluation of nutritional status is documented within 72 h of admission;
- Osteoporosis (n = 3): e.g. percentage of vulnerable older persons with osteoporosis for which calcium and vitamin D supplements are prescribed;
- Pain (n = 7): e.g. percentage standardized measurements of pain in postoperative patients;
- Patient characteristics (n = 4): e.g. average autonomy score of patients seen by the mobile team;
- Pressure ulcers (n = 7): e.g. percentage of older persons with a (new or worsening) pressure ulcer;
- Recommendations (n = 3): e.g. adherence rate to the recommendations of the IGCT team;
- Screening (n = 10): e.g. percentage of hospitalized patients aged 75 years or over that are actively screened for frailty using the questionnaire "Identification of Seniors at Risk Hospitalized Patients" (ISAR-HP);
- Sleep disorder (n = 2): e.g. perecentage of vulnerable older persons that are screened annually for sleep problems;
- Substance abuse (n = 4): e.g. percentage of vulnerable older persons that are screened at least once to detect problem drinking and hazardous drinking by taking a history of alcohol use or by using standardized screening questionnaires;
- Team composition (n = 6): e.g. existence of a formal intervention procedure for the IGCT team;
- Urinary incontinence (n = 9): e.g. percentage of vulnerable older persons that have a documentation of the presence or absence of urinary incontinence during the initial evaluation;
- Other outcomes (n = 21): e.g. percentage unplanned hospital readmissions withing 30 days of discharge for patients seen by the mobile team in the hospital; percentage of patients admitted from home and discharged home.

Next, all duplicate quality indicators were removed leaving **155 quality indicators** in the final long-list (Appendix 12).

5.3.4 Belgian initiatives

Different past and current quality indicator initiatives exist, that can be used or further developed in Belgian hospitals. In this section we describe some of these initiatives without the aim of being exhaustive.

Already in 2006, the **KCE published a report on clinical quality indicators**. At that time various, sometimes overlapping, Belgian initiatives for measuring health and quality indicators were identified at different governmental levels and with different purposes.[204] Although in Flanders efforts are, nowadays, channeled via the Flemish Quality indicators project (see below) a certain duplication of efforts may still exist. In KCE-report 41 it was explored for four areas (i.e. acute stroke, perinatal care, care of vulnerable elders, total hip prosthesis) what the usefulness of the linked MZG/RHM and AZV/SHA databases was for the measurement of quality

indicators in Belgium. The domains of 'total hip prosthesis' and 'vulnerable elders' are relevant for the current study. Based on a literature review potential relevant indicators (and their level of evidence) were identified. Next, the feasibility of measurement of these indicators based on the available data sources was assessed. Finally, the selected evidence-based quality indicators were discussed in expert groups. The literature review resulted in 169 (mainly process and ACOVE-based) quality indicators for vulnerable older persons and 11 (mainly outcome) quality indicators relevant for total hip prosthesis applicable to the acute hospital setting. Twenty-nine and 7 evidence-based quality indicators were assessed a priory as feasible to be measured based on the available administrative databases. In most cases, the main barriers for measurement were the lack of clinical information (e.g. health status, contra-indications) and absence of billing data (e.g. for care provided by allied health professionals, for out-of pocket drugs). Finally, the feasibility of measurement was tested for 5 vulnerable care and 6 total hip replacement quality indicators in a sample of 4 hospitals.[204] The following indicators were tested[204]:

- Vulnerable elders:
  - Proportion of vulnerable elders with dementia and depression that is treated for the depression with tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs)
  - Proportion of vulnerable elders with a diagnosis of heart failure and atrial fibrillation that is treated with anticoagulation;
  - Proportion of vulnerable elders with a diagnosis of heart failure that is treated with an ACE inhibitor and/or a beta blocker;
  - Proportion of vulnerable elders with a recent myocardial infarction or recent coronary bypass graft that is offered physiotherapy;
  - Proportion of elder patients with gait- or balance problems that received physiotherapy.
- Total Hip replacement (THR):
  - Proportion of patients with deep venous thrombosis after THR;
  - Proportion of patients with pulmonary embolism after THR;
  - Proportion of surgical site infections in patients undergoing THR;
  - Proportion of patients who receive thromboprophylaxis for THR;
  - Proportion of patients receiving prophylactic antibiotics with first generation cephalosporin's;
  - Proportion of patients receiving at maximum 24 h dose of first generation cephalosporin's for total hip replacement.

The results of the calculations were similar on hospital data and on data present in the administrative databases.[204]

In 2012, the second '**Belgian health system performance assessment**' was published including results on 74 performance indicators.[167] All indicators were the result of a literature review, expert discussion and availability of data sources. Some of these indicators are relevant for the current study such as:

- Incidence of pressure ulcers in hospitals (%);
- In-hospital mortality after hip fracture (%);
- GP encounter within the week after hospital discharge (% patient aged 65+).

A nurse sensitive quality indicator set was developed by the Belgian Council of the Quality of Nursing Activities with relevant indicators for assessing the quality if care for older patients with a geriatric profile, such as:

- Malnutrition: e.g. structural and process indicators focussing on malnutrition of hospital admitted patients;
- Pressure ulcers: prevalence, structure and process indicators;
- Physical restraint use.[205]

In Flanders, hospitals joined efforts on the measurement of quality indicators through the **'Flemish Quality Indicators Project'** called VIP². This project was launched after a collaboration agreement was made between the Flemish Association of Medical Directors, the Flemish Government, patient organisations, scientific and professional organisations, with the objective to define relevant process and outcome indicators to objectify the quality of the delivered care with the purpose (1) to improve processes continuously and (2) to publish the results on the website of the hospital.[206, 207] By the end of 2013, 35 quality indicators in five domains (oncology, mother & child, cardiology, orthopaedics and hospital wide) were being defined and/or implemented.[208] Although on a voluntary basis, the vast majority of hospitals

participate. Some of the 'hospital-wide indicators', 'orthopedic' and 'cardiology' indicators are relevant for the current report. Examples are:

- Readmissions: the proportion of readmissions via an emergency department of the same or another hospital within a period of seven days after discharge from the hospitals;
- The proportion of patients with a surgery for hip fracture who receive this treatment within one day after admission;
- The proportion of patients with a systolic left-ventricle dysfunction receiving a ACEI or ARB therapy upon discharge from the hospital.

The development and implementation of quality indicators is one of the three pillars of the Flemish policy related to quality of patient care. Besides the quality indicators, the Flemish government supports the accreditation of hospitals and development of a new model for auditing the quality of patient care. This new audit model consists of **unannounced hospital sites visits during which the direct practice for an entire care trajectory** (e.g. surgical care) is audited with a focus on hygienic conditions, patient safety and communication. One of the criteria which is checked is that each hospitalsed patient of ≥75 years (on C- and D-units) is screened for frailty based on a validated instrument (e.g. ISAR, GRP) and within one day after admission.[208] In addition, it should be noted that Flemish hospitals who choose to opt for hospital-wide accreditation (to be obtained at the latest on 31 December 2017), are exempted from a hospital-wide audit by the Flemish authorities (not from the targeted audits of care pathways). In June 2014, 60 of the 65 Flemish hospitals have chosen for a hospital-wide accreditation by an external accreditation body. Twenty-three hospitals chose for JCI and 28 for NIAZ ('Nederlands Instituut voor Accreditatie in de Zorg'). Nine hospitals did not (yet) make a decision and will be audited by the Flemish authorities on the basis of a self-assessment report.[207]

The **geriatric college of physicians** is currently developing a set of quality indicators to evaluate geriatric care in Belgian hospitals. This is work in progress and mainly based on the (in-)appropriationess of medication prescription for geriatric patients. It starts from an existing toolkit, developed in the UK (i.e. STOPP: Screening Tool of Older People's potentially inappropriate Prescriptions)/ START: Screening Tool to Alert doctors to Right i.e. appropriate, indicated Treatments) Toolkit[209]. For most indicators the denominator 'geriatric patients treated on G-units' is used. Examples of indicators are:

- % of patients on tricyclic antidepressants at discharge;
- % of patients using first generation antihistamines (chlorphenamine, cyclizine, promethazine) at discharge;
- % of patients with a beta-blocker and verapamil at discharge;
- Number of patients taking more than 8 different drugs at discharge.

It is **clear that many initiatives already exist and that indicators that aim to evaluate the quality of care for geriatric patients can build on these initiatives**. Indicators should be selected for their strong evidence base and their level of support from the stakeholders. Since both the federal as well as the federated entities undertake quality improvement initiatives, it will be **important to take measures to prevent the unneccessary duplication of efforts**.

Key-points

- **A scoping review of the literature resulted in a long-list of 155 quality indicators which are relevant to evaluate the quality of in-ospital care for geriatric patients and potentially applicable to the IGCT care model. These are predominantly indicators at the process level.**
- **Several Belgian initiatives exist where a small sub-part of these indicators were further developed based on readily available administrative databases.**
- **It was beyond the scope of the current study to develop and test the operational definitions of the quality indicators included in the long-list derived for this report. Further development, testing and implementation of these indicators should build on/be alligned with the discussed existing initiativesto prevent unneccessary duplication of efforts.**

6 DISCUSSION

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6.1 Acute geriatric nursing units fail to accommodate the increasing prevalence of frail older persons

Acute geriatric units remain the preferred organizational model to implement the 'comprehensive geriatric care' principles for older persons with a frail profile. However, with the ageing population also the **prevalence of patients with a geriatric profile on non-geriatric nursing units is expected to increase**. This will require a shift from a single-condition approach towards a multidisciplinary holistic approach. After all the 'geriatric comprehensive assessment' has proven to be effective for this type of patients.[1, 14]

In the past, older persons with a geriatric profile were predominantly treated on or referred to G-units. Although this organizational model is still the gold standard to implement the 'geriatric comprehensive assessment approach', **it is deemed unrealistic that all patients with a geriatric profile can be treated on G-units** in the foreseeable future. After all, there are indications that the current capacity does not meet the demand (e.g. more justified beds than accredited G-beds; less accredited than programmed G-beds). This problem is not easy to solve since there is already a shortage of geriatricians to run the current capacity of G-beds. Attempts to tackle this shortage of geriatricians by imposing a minimal number (i.e. n=20) of medical specialist to enroll in the medical specialism of geriatric care each year, were not successful. More policy measures will be needed to increase the attractiveness of this medical specialism, especially the recalibration of the physician fees to ensure that geriatricians have an income that is comparable to other medical specialisms.[28]

In order to deal with this problem, the Belgian authorities invested, since 2007, in the 'geriatric consultation teams' with a focus on the inpatient geriatric liaison function, in this report referred to as **'inpatient geriatric**

consultation teams' (IGCT). The main aim of these multidisciplinary teams is to share the core geriatric principles and multidisciplinary expertise to all medical staff and care teams and for all hospitalized persons (including day hospitalisations) with a geriatric profile who are admitted in non-geriatric units. The principles of the IGCT-concept (e.g. method of case-finding, comprehensive assessment and recommendations) as well as the organisational requirements (e.g. composition of teams) are in a rather prescriptive way detailed in the legislation on the care programme for geriatric patients (first version established in 2007, recently revised in 2014) . The funding evolved from a pilot-funding that was the same for all participating hospitals (i.e. 4 FTE per hospitals) towards a variable budget (i.e. between 2 and 6 FTE based on the number of patients aged ≥75 years hospitalised on non G-units). This continued investment in IGCT teams,despite absence of evidence on its effectiveness is in line with the recommendations published by several Belgian institutions and organisations (e.g. the Federal Public Service of Public Health (FOD/SPF), the National Council of Hospital Services (NRZV/CNEH) and the Belgian Association for Gerontology & Geriatrics (BVGG/SBGG)). The recommendations are mainly based on the fact that the prevalence of older persons with a geriatric profile is on the rise and that IGCT have high face validity for clinical practice. It should be noted that no exact figures are available to evaluate if all patients with a geriatric care profile on non-geriatric units are seen by an IGCT. This is lower than what can be expected by the literature. Buurman et al. (2011)[9] evaluated, for instance, the prevalence of geriatric problems in acutely hospitalized older patients (n=639) in three teriary care settings with an average of six identified problems per patient at hospital admission. The most prevalent geriatric conditions were impairment in Instrumental Activities of Daily Living (IADL) (83%), polypharmacy (61%), mobility difficulties (59%), perceived burden on caregivers (53%), malnutrition (52%) and ADL impairments. Moreover, all screened conditions (except pressure ulcers) were simultaneously present in at least 13% of the patients. Other studies also point out that prevalence rates of patients with a geriatric profile on non-geriatric nursing units is higher than 6%.[7, 210]

6.2 The IGCT care model: high face validity but absence of evidence on its effectiveness

Evidence that underpins the effectiveness of IGCT teams is lacking

To date, several literature reviews and meta-analyses have been published regarding the effect of IGCT care models on outcomes of older hospitalized patients.[14, 17, 22, 126] These studies included outcomes such as functional decline, (unplanned) hospital readmission, mortality and institutionalisation, and failed to show conclusive/consistent evidence for the effectiveness of the IGCT care model (see 1.2.3).

High face-validity: holistic approach and dissemination of geriatric expertise

IGCTs have high face validity contributing to a multidisciplinary and holistic approach of older persons with a geriatric profile, and to a dissemination of the geriatric expertise and culture throughout the hospital. They are, despite the absence of evidence, believed to shorten LOS, decrease readmission rates and improve functional outcome of this patient population. Several of these strengths, such as the 'holistic and multidisciplinary approach',[39] spreading of geriatric culture[39] appeared from the SWOT-analysis and are in line with previously published reports.

6.3 Heterogeneity in the way IGCT teams are implemented in Belgian hospitals

Prescriptive legislation but various models in the field

The implementation of IGCTs in Belgian hospitals is highly heterogeneous, for instance with regard to case-finding and assessment methods and the hospital units targeted for intervention). A possible explanation is that hospitals are forced to make operational choices since the demand for geriatric expertise clearly outweighs the supply of available resources. This is not only due to the budgets allocated to IGCT but also because of the availability of staff with a specialised expertise in geriatric care (both geriatricians and specialised nurses). Similar heterogeneity appeared in the international context (e.g. results of scoping review and international survey).

Despite the prescriptive legislation (and failure of hospitals to implement these rules), different pockets of innovation exist (e.g. case-finding on pre-hospital consultations for elective patients, integration of IGCT recommendations in the discharge letter via the electronic patient record). Yet, they are not sufficiently picked up by other hospitals since there are no knowledge sharing platforms.

Advisory role of IGCT teams hinders the implementation of recommendations

IGCT teams in Belgium have a solely advisory role which is seen as an important reason of non-adherence to the recommendations made by IGCTs.[33, 39]. This is in line with the international figures of IGCTs with a solely advisory role obtained in the current report.Other reasons for poor adherence to advices are, for instance, the lack of follow-up of recommendations by IGCT,[39] the lack of susceptibility for 'geriatric care' among medical specialists and the lack of time to implement the recommendations during the hospitalisation (because of the shortening LOS). Similar barriers emerged from studying the international context of IGCT.

6.4 International context of IGCT

Is IGCT an international wide-spread implemented and researched concept?

The scoping review resulted in the identification of 43 papers. When judging the amount of literature retrieved, it should be taken into account that these 43 papers were published within a timeframe of over 30 years (1983-2012), and that they report solely on 24 distinct IGCT services. As such, and despite the extensive literature search strategy applied, it can be concluded that only a limited body of research evidence regarding IGCT services was identified in the current KCE study. Notwithstanding the fact that all Western countries face demographic challenges with a steadily increasing older population, these 24 IGCT services originated from only 7 countries, suggesting that this care model has no widespread use, both within and across countries. Furthermore, the finding that the majority of older studies (e.g. published ≤ 1999) was conducted in USA and Canada, while more recent studies mostly originated from Europe, was interesting.

The semi-structured interview with caregivers and researchers from the USA acknowledged that implementation of IGCT is limited to a small scale level. Its implementation seems to be dependent on research interest, support of health administrators and logistics and practicality at the hospital level and also faces barriers at the hospital level such as financial rentability, a shortage of geriatricians and lack of evidence on clinical effectiveness. In addition, it should be noted that the prevalence of older people is lower in the US than in most European countries. While in 2014 17.9% of the Belgians was 65 years or older, this exact same proportion of older people is estimated to be present by 2025 in the United States.[211, 212] These challenging contextual factors might explain the withering clinical and research interest in IGCT models.

Are geriatric resource nurses (GRNs) used to enhance the impact of IGCTs?

This report identified a lack of descriptive information and effectiveness evidence regarding the cooperation of IGCTs with geriatric resource nurses (GRNs), as only one study from the USA included in the scoping review described such a combined care model. In the semi-structured interviews it was explained that the implementation of care models incorporating GRNs face several barriers. First, *a shortage of geriatric trained nurses* in the USA was noted. Second, *GRNs were often consulted when problems were already manifested* instead of a proactive implementation. The GRN model was also only used by 1 of the 14 French and 4 of the 11 Dutch surveyed hospitals, focusing on identifying older patients with a geriatric profile and educating team members, being implemented mostly on medical units. To guide any recommendations for the Belgian context and legislation of IGCT, more research is needed to study the effectiveness, feasibility and added value of combining both care models (IGCT and GRNs). Thereby, it should be taken into account that the Belgian legislative framework on IGCT recently underwent major revisions with regard to this topic. Whereas the law from 2007 purposively envisioned a combined implementation of IGCTs and GRNs, this aim was omitted in the recently updated framework. As the decision-making process and underlying arguments of this decision were not clearly communicated, it warrants further clarification and discussion. Yet, the abolishment of GRNs from the law that regulates the care programme for geriatric patients is not entirely surprising since the

performance of the function of GRNs in Belgian hospitals has previously been rated as 'poor' or 'bad' in a survey of IGCTs.[37]

CGA: lessons learned from international practices?

Description of comprehensive assessment assessment (CGA)[54]

"a multidimensional interdisciplinary process focusing on determining a frail older person's medical, psychosocial and functional capability in order to develop a coordinated and integrated plan for treatment and long-term follow-up".

The health care of older patients with a geriatric profile extends beyond the traditional single-condition focues medical management of illness and requires an evaluation of multiple issues, including physical, cognitive, psychological, social and environmental components. To ensure that older inpatients' needs are properly assessed, the process of 'comprehensive geriatric assessment' (CGA) has been developed, and is nowadays recognized as one of the cornerstones of modern geriatric medicine.[54, 126] The definition of CGA[54] (see text box) will be used as a base to compare and discuss findings of the scoping review, international survey and semi-structured interviews with USA experts in the paragraphs below.

First, a CGA process is intended to focus on older persons with a geriatric profile, which refers to the methods for patient identification applied by IGCTs. The scoping review showed that only a minority (less than one third) of hospitals used formal screening procedures to identify patients with a geriatric risk profile. Moreover, such procedures were mostly only applied in the context of experimental studies, and did not seem to include the systematic use of internationally recognized screening instruments. According to the survey results, only a few hospitals in France screened admitted patients which is in contrast to Dutch hospitals who all performed screening. Other IGCTs only used a variety of broad patient eligibility criteria, which hinders targeted function of IGCTs and might therefore considerably increase the IGCTs workload. Furthermore, the semi-structured interviews detailed the importance of pro-active implementation of this model, which necessitates a formal and accurate screening procedure. Taking into account problems related to formal screening procedures (e.g. potentially high rates of false positives depending on cut-off scores used,[7]), more in-depth practice-oriented research is needed to delineate the most optimal patient selection methods. Apart from optimal patient selection, appropriate intervention based on screening outcomes needs to be delineated. Only half of the responding IGCTs in the survey automatically initiated IGCT interventions, e.g. CGA, after a positive screening.

Second, CGA is a multidimensional process, indicating that the medical, functional, mental and social dimension of an older inpatient should be taken into account in the baseline IGCT assessment. Although many identified studies included statements on the performance of a comprehensive baseline assessment, only slightly over half of all identified IGCTs addressed all four aforementioned dimensions. Moreover, most IGCTs only assessed a limited number of topics/items within each dimension. As such, this important aspect of the IGCT care process likely warrants substantial improvements in both daily clinical practice and future research regarding the IGCT care model. The survey results were more positive, meaning that all domains and all of the items within each domain were assessed by most of the included IGCTs. Patient assessment within the Netherlands is supported by CGA guidelines.

Third, a CGA process should lead to the development of a coordinated and integrated plan for treatment, based on the results and discussion of baseline patient assessment. Within the IGCT care model, this is done through formulating recommendations regarding the care for the consulted patient. In accordance with previous overview studies, [14, 22] the scoping review showed that the adherence rates to units such IGCT recommendations varied widely and that a lack of adherence was a main operational problem across IGCTs. This finding is in contrast with the international survey results in which almost all included IGCTs rated the overall adherence 'good', as subjectively perceived by the IGCT. The inclusion of good performing Dutch hospitals scoring at least 75% for the item 'geriatric expert team' in the SFH Quality Label, and the tendency of respondents towards positively biased self-evaluations, may explain this finding. The grey literature for France contradictorily observed a low adherence to IGCT recommendations. Non-adherence has been identified as an important factor contributing to the lack of effectiveness of IGCTS interventions on outcomes.[22] The finding that adherence is often hampered

by a variety of barriers at the provider-level (e.g. attitudes of the CTU), hospital-, and healthcare system-level (e.g. infrastructure and working procedures, support from nursing management, financing, staffing levels), warrants the need to further map and subsequently address these barriers in clinical practice. For example, almost all Dutch surveyed hospitals reported taking actions to improve adherence to IGCT recommendations, such as education sessions and coaching the care team. Also, a hybrid role of IGCTs (e.g. allowing teams to directly order or implement part of their recommendations in patient care) has been proposed as a possible solution.[22] As in the current study problems regarding adherence were most often mentioned in studies on IGCTs with a solely advisory role, the impact of this role adjustment should be further studied. Alternatively, the semi-structured interviews revealed an increasing interest in the co-management model (with shared direct responsibility for the care process and outcomes between the treating physician and geriatrician) in order to combat non-adherence to recommendations.

Fourth, a CGA process should include the development of a coordinated and integrated plan for long-term follow-up. However, only half of all IGCTs included in the literature review reported on the provision of in-hospital patient follow-up, or any form of collaboration with the primary care setting. The finding that only a minority of teams explicitly stated to communicate their recommendations to the patient and the primary care setting is surprising and in contrast to French surveyed hospitals where almost all IGCTs communicated both assessment and recommendations to the primary care setting. Despite the Dutch guideline detailing the importance of transitional care, only half of the surveyed hospitals communicated with primary care professionals. More research is required to further develop and evaluate the component of in-hospital patient follow-up by IGCTs, and to refine its linkage with transitional care models to primary care. Interestingly, the grey literature search for France revealed IGCT implementation in the primary care setting, performing CGA and providing advice and training.

Fifth, CGA is an interdisciplinary process. This implies that several (≥ 2) disciplines are represented in the IGCT team. Although the composition of the 24 IGCTs described in the review was rather heterogeneous, most teams indeed had at least three disciplines represented. The IGCTs appeared to be strongly driven by nurses, in many cases also being experts in geriatrics both in terms of field experience and level of education. IBased on the peer-reviewed literature, he majority of IGCT nurses in the US was educated at the Master level and functioned as an advance practice nurse (APN) (e.g. clinical nurse specialist in gerontology/geriatrics, geriatric nurse specialist practitioner). Apart from two teams, these nurses worked in close collaboration with geriatricians. The survey results for France and the Netherlands acknowledge both geriatric medicine physicians and geriatric trained nurses as core members of an IGCT.. The semi-structured interviews with the researchers in the USA uncovered advance practice nurses as key members of the ACE consult team. The grey literature for both France and the Netherlands confirms the position of geriatric medicine physicians and of (geriatric trained) nurses in the IGCT, which is mandatory by French law. Allied health professionals were less often represented in IGCTs in the scoping review, mostly being social workers. Both in the Netherlands and France, the survey revealed that allied health professionals were either most often available on call or not consulted, in accordance with the grey literature for both countries.

The sizes of IGCT teams in terms of the number of FTE varied widely in the scoping review which might be explained by several factors. For example, included IGCTs had a heterogeneous scope of intervention: whereas 75% of teams intervened on medical units, only one third or less provided consultations at surgical units or the ED. This is somewhat unexpected, as physicians in these latter medical areas might potentially have a less elaborate background in geriatric medicine, and would therefore be in particular need for advice or assistance on how to address specific multidimensional problems in a geriatric population. This finding is in contrast with our survey results, in which all included IGCTs were available on both general surgical and non-surgical units. In France, IGCTs were also often available in the ED as mandatory by French law. This is in contrast to the Netherlands were IGCTs rarely intervene in the ED. Also, team sizes may have been influenced by profound differences in IGCT care processes across teams. In particular and as elaborated below, the scoping review revealed large differences iregarding the level and profoundity with which IGCTs performed case-finding (screening) and assessment. Apart from team activities, IGCT staff size should also be in accordance to the hospital size, according to French grey documents.

The availability of financing for IGCT services might also impact team sizes, but identified data regarding IGCT financing were scarce and insufficiently

detailed to draw any firm conclusions. The international survey aimed to uncover IGCT financing in France and the Netherlands. However, these results were omitted from this report due to extensive missing data and as the research team deemed the limited obtained results unreliable. The grey literature from the Netherlands did detail the importance of a financial structure that enables appropriate care for older people with a geriatric profile, e.g. through care models such asIGCT. Importantly, consultation teams work in support of other care professionals only generating revenue in an indirect way. However, budgeting should take into account that the CGA team model does alleviate care needs in other departments. Each included country has a specific financial structure supporting their health system but a discussion of these was outside the scope of this report. However, in general, the USA, the Netherlands as well as France have financial support for IGCTs available, as detailed by the grey literature and semi-structured interviews.

Lastly, an interdisciplinary process is also characterized by several disciplines integrating their individual expertise and skills into the provided IGCT care through continuous collaboration. For example, the geriatrician, nurse, occupational and physiotherapist may each assess the functional capacities of an older inpatient, but their collaboration and sharing of skills and expertise is needed to fully assess and understand the patients' baseline functioning, and to subsequently formulate appropriate case-specific care recommendations. This implies that IGCT members need to have the opportunity to discuss their findings within the team, a process that is supported by the organisation of multidisciplinary team meetings. Although half of the IGCTs included in the scoping review did not mention data on this topic, about two third of IGCTs that did report such findings met on a daily basis. Both in France and the Netherlands, the majority of the surveyed hospitals indicated organising team meetings, mostly at a frequency of 1 to 2 meetings per week. As the health status of an older inpatient is often dynamic and highly sensitive for change during an acute hospitalisation, frequent team meetings are indicated to allow for formulating timely and accurate recommendations and to increase the adherence to these advices by the care team of the non-geriatric unit where the patient is hospitalized.

6.5 Is the quality of the care of IGCTs systematically evaluated?

A thorough evaluation of the quality of provided care plays an imperative role in current clinical practice, aiming at continuous improvements in care provision.[213] Despite its importance, the evaluation of the quality of IGCT care has to date received little attention in the international literature. This is in line with the findings of the current KCE report, as almost no IGCTs provided data on this topic (e.g. processes applied to evaluate provided care, domains of care that should be included in quality evaluations), neither through the literature review nor the survey method . Hence, the advices to use quality indicators to evaluate IGCT care models included in the grey literature for both France and the Netherlands do not seem to be widely implemented in the practice setting. Since the ambition should be to deliver high quality of care to all (geriatric) patients regardless the hospital unit on which they are treated, further investments in this area are of primary importance. Thereby, several ongoing initiatives for quality assessment and improvement of care for hospitalized geriatric patients should be taken into account. In the Netherlands an accreditation program with a specific focus for the quality of care for 'vulnerable older persons in acute hospitals' exist (e.g. the 'Senior Friendly Hospitals-project'). The SFH evaluation criteria include the systematic screening of older patients for a geriatric profile as well as the availability of an IGCT on a 24/7 basis.[214] In Flanders, the quality audits of the public authorities also foresee the evaluation of the 'screening of older patients for a geriatric profile' on general surgical and internal medicine nursing units. In addition, a bulk of international studies and reports exist on the development of indicators to evaluate the quality of care for hospitalized geriatric patients. In part, these indicators are also relevant to evaluate the care for geriatric patients treated on non-G nursing units as delivered through the IGCT model. Moreover, several initiatives for the evaluation of healthcare quality are ongoing (e.g. Flemish Quality Indicators Projects). It is recommended to integrate a set of indicators with the specific aim to monitor the quality of hospital care for older patients with a geriatric profile in these current initiatives.

6.6 Alternative care models emerge

Based on the available evidence, there is no one 'gold standard' model for providing high quality care to older patients with a geriatric profile, multi-morbidity or dementia who are admitted on non-geriatric units. A variety of models are implemented in practice, and it should be noted that there is a shift from IGCTs with a purely advisory role towards co-management or other models with a more direct control over/responsibility for provided care. In addition, an increasing number of models that experiment with workforce innovations or that transcends the boundaries of the 'classic hospital' (e.g. transitional and home-based care models) are observed.

Consultation or shared decision making?

Based on the results of the scoping review, the survey and the interviews with USA stakeholders it can be concluded that the IGCT care model has found no widespread use internationally, both within and across countries. However, our survey results indicate that only a minority of older people are hospitalized on geriatric units. This stresses the need for care models aiming to provide appropriate in-hospital care for older adults on non-geriatric units. Within the current international context, a shift towards co-management models has been observed in the Netherlands and USA. Although co-management falls outside the scope of this report, these results were still deemed important. Noteworthy, the co-management model described in Dutch guidelines by the NVKG closely resembles the IGCT model implemented in Belgium. An interest in these shared decision making models was induced by the lack of clinical effectiveness for the consultation model. The semi-structured interviews in the USA point to the potential benefits of a pro-active implementation of geriatric care focusing on specific geriatric problems working complementary to acute medical care compared to a solely advisory role. Nevertheless, the first meta-analyses[24, 25] on shared care models for geriatric patients are only including a limited number of often small-scale studies, to date resulting inwith inconclusive results about its effectiveness. Therefore, the need for stronger methodological studies is stressed prior to making firm statements about the co-management model.

Workforce innovations

The lack of expertise in geriatric care among medical specialists without a specific training in geriatric care was identified as one of the major threats to deliver high-quality care for vulnerable older persons in the future, both through the SWOT-analysis and the literature review. Yet, it seems unrealistic that the current Belgian policy measures aiming to increase the number of 'geriatricians' will be sufficient to solve this problem. Therefore, it might be worthwhile to study the workforce innovations that take place in other countries that face similar problems. The analysis of the international examples showed that, especially in the US, the nurses of the IGCT are prepared at the master-level and often have an 'advanced nursing practice' role. A recent review on 'specialised nurses for patients with dementia in acute hospitals' illustrates that this 'advanced nursing practice role' can be part of, but should not be limited to the IGCT care model. With the increasing number of graduating master-prepared nurses in Belgium, it might be worthwhile to put this workforce innovation back on the policy agenda.[215] After all, previous work illustrated that there is room for improvement on this front in Belgian hospitals.[216]

Models outside the hospital boundaries

The example of France illustrates that the scope of practice of IGCT teams is not limited within the boundaries of the hospital. IGCT teams also deliver outreaching care within the communities. In addition, the semi-structured interviews with US-based experts also showed that, in the US, models such as 'hospital-at-home' or '' gain importance. However, many more models (e.g. care hotels, tele-health, community hospitals, transitional facilities, convalescence units, discharge programs, re-ablement services …) exist.[217, 218] It is expected that also in Belgium these developments in alternative care models will gain importance (e.g. decreasing length-of-stay in hospitals).

Knowledge sharing platform

During the SWOT-analysis certain pockets of innovations were identified (e.g. screening older patients for a geriatric profile on the pre-hospitalisation consultation). Yet, these innovations fail to be disseminated across hospitals. The interviewed stakeholders identified, not taking into account the voluntary undertaken initiatives between some hospitals[219], the absence

of a 'common knowledge sharing platform' as a major shortcoming. They pointed out that such a community of practice existed at the start[220] and was much appreciated. However, without a continued support of the public authorities these efforts diluted over time. The need for experimentation with alternative care models without knowing in advance which models works best stress the importance of the re-installment of such a community of practice that is supported by the public authorities and coincides with academic support to evaluate the initiatives in the field. Examples of such 'community of practices' exist in healthcare (also for the older persons) at the level of the federal and federated authorities.[221, 222].

6.7 Methodological considerations

This study has several methodological limitations which should be taken into account when interpreting the results.

SWOT-analysis

An important limitation of the SWOT analysis is that participants in the groups were all 'believers' of the IGCT, even the 'clients'. This is likely to be a consequence of the fact that only hospital units that make use of the IGCT were invited to participate. The voices of those units not using the IGCT, and who might be more critical towards IGCT, have therefore not been heard (or only indirectly). While these methodological choices might have caused some bias in the results, there are indications that this bias should not be overestimated. Indeed, the results show a good balance between strengths and weaknesses and participants across all groups proved able to critically reflect upon the IGCT care model.

Literature review

First, because of feasibility, some steps in the process of study identification, selection and data-charting could not be independently performed by two or more researchers. To counter for this potential source of researcher bias, regular and elaborate discussions within the research team were held, especially for core methodological decisions and for the interpretation and presentation of the chapter's findings. Second, a publication bias for the scoping review is likely. Suitable studies reporting on the IGCT care model might have been missed, as we limited our database search to studies published ≥ 1999 for feasibility reasons. Older studies were only identified through systematically hand-searching reference lists of key-publications regarding IGCT care, including systematic reviews and meta-analyses. Also, the entire search strategy was limited to English, French and Dutch papers, based on the language skills of the research team. As such, studies on IGCTs originating from countries with other official languages might have been overlooked. Third, both studies with an experimental and descriptive design were included in the scoping review. Descriptive studies often provided richer information on the composition and operationalisation of IGCTs, but lacked information on the evaluation of IGCT care (e.g. evaluation methods applied, impact on patient outcomes). On the contrary, experimental studies did discuss the latter, but their description of structure and process elements was often very concise. Also, the interventions described in experimental studies may not be directly transferrable to and differ from daily clinical IGCT practice, as experiments tend to be tested in optimal conditions (e.g. availability of sufficient healthcare workers with geriatric expertise) and with the availability of more financial resources due to research grants. The aforementioned study characteristics might hamper both a full understanding of the structure and process of IGCT care in daily clinical practice (research aim of this chapter) and the formulation of minimal quality criteria/indicators for care delivered by IGCTs (chapter 5).

International survey

With regard to the survey, due to resource constraints, only one round of expert review was performed to evaluate the content validity of the international questionnaire. However, a second round after the initial adaptations to the questionnaire is recommended.[56] Whereas the S-CVI$_{Ave}$ of the final questionnaire was above the threshold for a good content validity, the more stringent calculation using the S-CVI$_{UA}$ showed that there were a low number of items which the experts unanimously found (un)relevant. Because of the international character of the survey, English was used as the main language. To counter a potentially low response rate of French hospitals, we provided a French, non-validated version of the questionnaire. However, a cross-cultural adaptation, a translation using a recommended translation method, and a validation of the French questionnaire are required before using it in future research but could not be performed due to resource constraints. Also, the psychometric properties of the applied instrument can be assessed more extensively in future research. The results of the international survey should be interpreted with caution, as only a limited amount of IGCTs responded to our survey, resulting in a small sample size.

Therefore, data should not be used to draw overall conclusions at the country level. Furthermore, only two countries met our survey inclusion criteria, which hindered broader international comparisons of IGCT practice. Also, only hospitals in the Netherlands who scored high on the SFH quality indicator item concerning IGCT were approached to participate in the survey, purposely selecting good performing IGCTs (best practices). Their reported data may therefore not be fully representative for other Dutch hospitals.

Semi-structured interviews

Finally, some limitations for the semi-structured interviews are apparent. Only four participants were interviewed to gain further insight in the implementation of geriatric consultation models in the UA, which limits the generalizaibility of our findings. On the other hand, the interviewees were carefully selected and are internationally perceived as key researchers in the field of geriatric care models.

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