IMPLEMENTATION OF AN INTEGRATED CARE PATHWAY (ICP) FOR DEMENTIA IN THE CLINICAL PRACTICE: *THE* REMIND *STUDY*

D ARENELLA, G FILIPPINI

Scientific Direction - Neurological Institute Carlo Besta - Milan, for the *REMIND*~

Introduction

The constitution of the Integrated Milanese Network for dementia (*REMIND*) is the result of a wide process whose aim was to guarantee continuing care, timely diagnosis, pertinence of therapeutic interventions and the sharing of an integrated care pathway in patients with dementia.

In December 2006 the General Healthcare Direction of Lombardy appointed a technical committee for neuroprogressive disorders which produced a first report acknowledged in the Regional Decree nr. 9942 of 10/05/2009 (*Resolutions about network organization and standards of acknowledgment for clinical facilities devoted to dementia*).

Following the Regional Decree n. 9942, Health Authority of Milan designated a research group for the realization of an Integrated Care Pathway for dementia (ICP), which was submitted to the opinion of many specialists working in Hospital Memory Clinics (HMCs) or Community-Based Specialist Services (CSSs) and General Practitioners (GPs) of the city of Milan. The ICP was approved in 10/20/2011. ICP aims to reduce the impact of dementia for families and for national and regional Healthcare Systems, taking into consideration the chronicity, the high level of comorbidity and the great need of interdisciplinary approach and outcome measures; ICP provides an structured model (Who does What and When) for achieving timely diagnosis, taking charge of the patient's care at the different stages of the disease and managing the urgencies (***fig. 1***).

REMIND project has been supported by Region Lombardy and Healthcare Ministry, and it was tested initially in two districts of the Health Authority of Milan. After a pilot phase of the project, REMIND has been extended in may 2013 to the hole territory of the Health Authority of Milan (7 districts) including 352 GPs, 13 HMCs, 16 CSSs, 9 social care community services, 6 neuropsychological units and 1 coordinating center (***fig. 2***).

The main aim of REMIND is to test the applicability of the dementia ICP in an integrated network involving hospitals, territory and GPs, where the latter represent the starting point of the clinical pathway and a key node of the hole network.

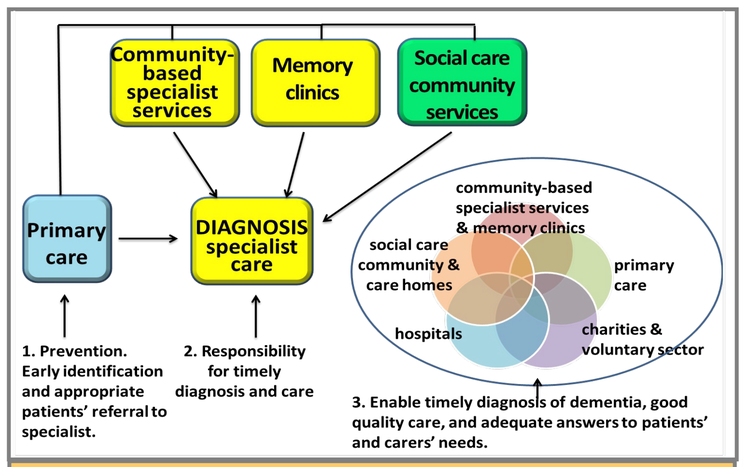

Fig. 1 *- Dementia ICP 2013-2015: Organization model*

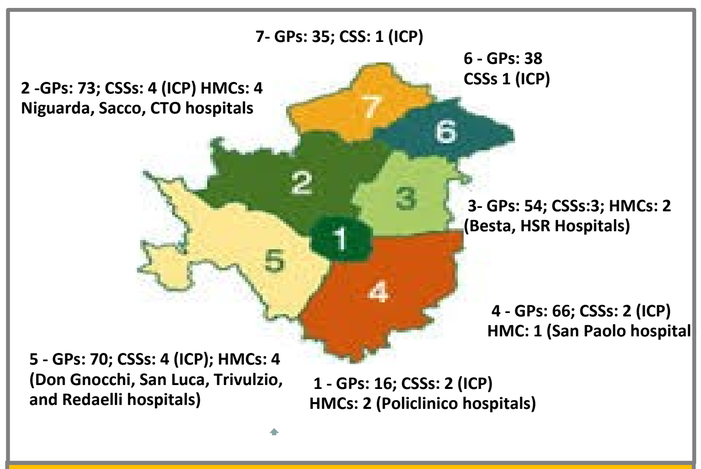

Fig. 2 - *Dementia ICP 2013-2015: the 7 districts in the Milan HA*

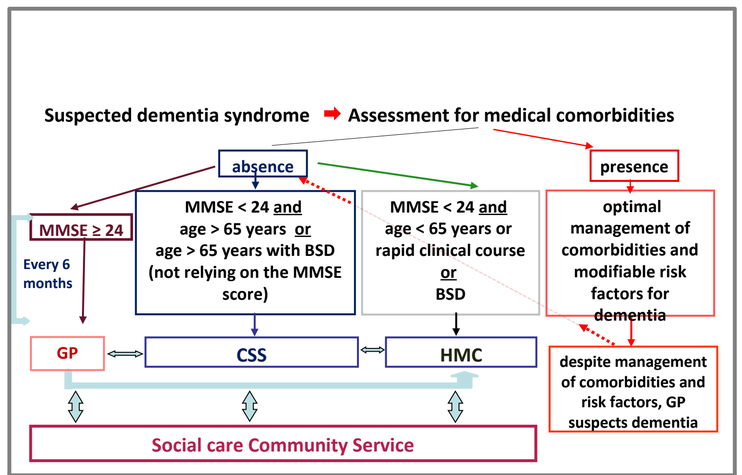

Fig. 3 *- ICP Recommendations*

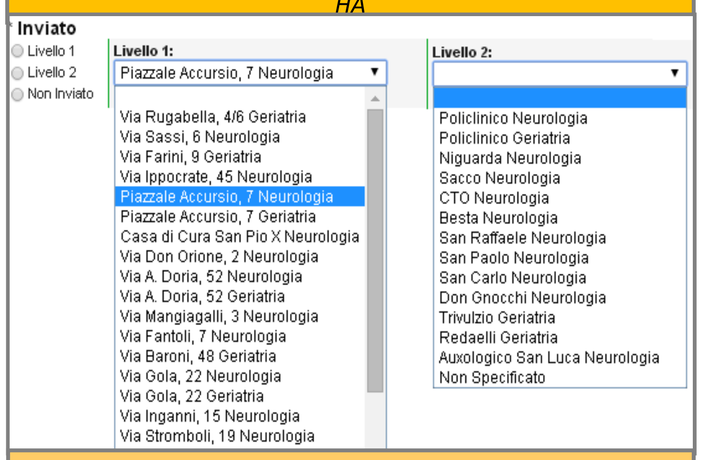

Fig. 4 - *Form allowing the coordinating centre to reserve specialistic exams in the facility chosen by the GP*

Methods

An educational intervention was given to GPs in 13 district educational courses. The main purposes of this intervention were: 1) promoting protective lifestyle behaviors in elder patients; 2) encouraging timely diagnosis in patients who complain memory loss or other forms of cognitive impairment; 3) teaching the GPs to administrate the Mini Mental State Exam (MMSE) in order to improve the referrals to the specialist; 4) guiding patients and caregivers in taking advance of Health and Social services available. 1200 GPs took part at these courses.

352 of 1200 GPs accepted to participate to *REMIND* study, a 3-year population-based pragmatic prospective cohort study. Persons with a suspected cognitive impairment were eligible by the GP, while persons with a well-defined diagnosis of dementia were not eligible. All subjects enrolled signed an informed consent. GPs were expected to enroll at least 1% of all their patients and received a fee if the goal was reached. A web based database was developed to enhance information exchange between GPs and specialists. Clinical data were collected in electronic case report forms (eCRFs) and included in the shared database. GPs filled the eCRF reporting anamnesis, comorbidity, therapy and MMSE scores. GP referred the patients to the specialist according to the flow chart showed in ***fig.3***. The coordinating center organized specialist visits according to the request of GP (***fig 4***). Specialists (geriatrist or neurologist) filled a specific eCRF, in which they inserted the results of neurological exams and neuropsychological assessments, detailed information about requested instrumental exams, diagnosis and specific dementia therapy administered.

Results

352 GPs enrolled 4249 subjects whose mean age was 77 ± 8 [range, 45-100]. 5% of included subjects showed a MMSE score <24 but were not referred to a specialist, in spite of ICP recommendations. For all the other subjects, GP decisions were compliant with ICP recommendations. No statistical significant difference was found between the two groups of patients (consistent with ICP's recommendations/not consistent with ICP recommendations) except for mean age, which was significantly higher in the second group (***fig. 5***).

76% of subjects referred to a specialist were examined by neurologists or geriatricians of REMIND network, while 24% refused GP's indication, preferred specialists out of the network, died or developed serious illness before the planned visit. Among 795 subjects who received basal examination by REMIND specialists, 103 (13%) received a diagnosis of Alzheimer disease, 96 (12%) mixed dementia, 40 (5%) vascular dementia, 60 (7.5%) other forms of dementia, and 55 (7%) were referred to GP having no cognitive impairment. 441 (55%) subjects were still under ascertainment after the first specialist exam (***fig. 6***).

A comparison made between the MMSE administered by GP and the MMSE administered by the specialist in 99 patients who received diagnosis of Alzheimer Disease within 6 months from the GP's exam showed that scores were comparable in 58% of patients (***fig. 7***).

1913 patients (48%) had a follow-up visit by the GP and repeated MMSE within a year; 1775 of them filled in a 15 items self-reported assessment for evaluating depression in the elderly (GDS).

PATIENTS	CONSISTENT WITH ICP: 4019 (95%)	NOT CONSISTENT WITH ICP*: 230 (5%)	TOTAL 4249 (100%)
FEMALE, N (%)	2674 (66,5%)	147 (63,7%)	2821 (66,4%)
AGE (MEAN ± SD [RANGE]) +	76,8 ± 8 [45-100]	80 ± 8 [46-96]	77 ± 8 [45-100]
YEARS OF SCHOOL (MEAN ± SD [RANGE])	8,9 ±4,3 [0-26]	8,4 ± 3,8 [1-25]	8,8 ±4,2 [0-26]
FAMILY HISTORY POSITIVE FOR DEMENTIA <65 YEARS, N (%)	194 (4,8%)	8 (3,5%)	202 (4,7%)
COMORBIDITY ++	3129 (78,9%)	172 (74,8%)	3301 (77,7%)
Thyroidism+++	331 (8,2%)	15 (6,6%)	346 (8,1%)
Diabetes	586 (14,6%)	32 (14 %)	618 (14,5%)
Hypertension	2476 (61,6%)	136 (59%)	2612 (61,5%)
Cardiovascular diseases	929 (23.1%)	57 (24,7%)	986 (23,2%)
DAILY DRUG INTAKE			
None	376 (9,3%)	25 (11%)	401 (9,4%)
≤2	1406 (35%)	86 (37,4%)	1492 (35,1%)
3-4	1253 (31,1%)	82 (35,6%)	1335 (31,4%)
≥5	984 (24,4)	37 (16,0%)	1021 (24,1%)
SYMPTOMS			
AMNESTIC ONSET	3713 (92,4%)	215 (93,5%)	3928 (92,6%)
Isolated memory impairment	*2525 (62,8%)*	*116 (54%)*	*2641 (62,1%)*
Multiple memory impairment	*1188 (29,5,%)*	*99 (45,9%)*	*1287 (30,5%)*
NON AMNESTIC ONSET	306 (7,2%)	15 (6,5%)	321 (7,4%)

Fig. 5 - *Comparison between two groups*

* Patients with MMSE <24 for whom GP did not suggest specialistic exam.
+ difference between the two groups is significant (p<0,001).
++ Comorbidity: only frequencies > 8%.
+++Only patients who take drugs for thyroidism were included.

MMSE COMPARISON* BETWEEN GP AND SPECIALIST IN 99 PATIENTS WITH DIAGNOSIS OF AD (POSSIBLE OR PROBABLE) AFTER FIRST GERIATRIC OR NEUROLOGICAL EXAM+		
	GP	SPECIALIST
MEAN	19	19
MEDIAN	19	19
STANDARD DEVIATION	5	5
RANGE	8 - 29	4 - 28
SCORE DIFERRENCE		
GROUPS		PATIENT'S NUMBER (%)
MMSE SCORE COMPARABLE (DIFFERENCE BETWEEN ± 2 POINTS) ++		57 (57%)
GP'S MMSE SCORE LOWER THAN 3 OR MORE POINTS		26 (26%)
GP'S SCORE HIGHER THAN 3 OR MORE POINTS		16 (16%)

Fig. 7 *– MMSE score comparison between GP and specialist*

*Only patients examinded by specialists within 6 months from the GP's exam were included.
+ Corrected by age and education, Measso 1993.
++ Fluctuations of MMSE score in Alzheimer Disease seem to be significant starting from 3 points of difference. See Bowie et al., Lancet 1999, 1527-8.

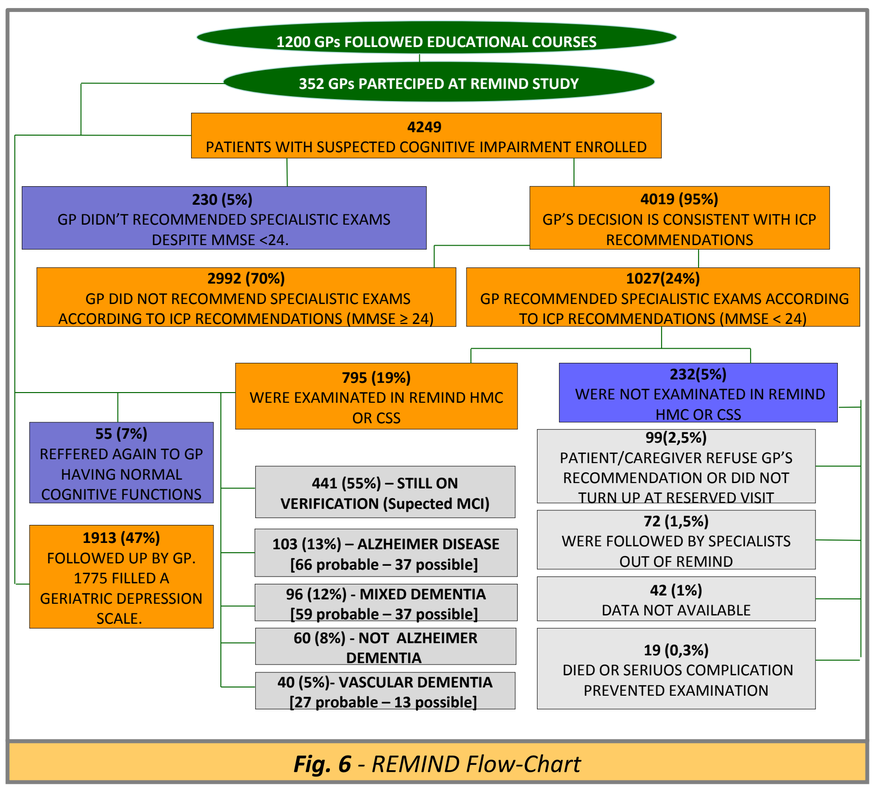

Fig. 6 *- REMIND Flow-Chart*

Conclusions

In the perspective of the National Dementia Strategy, the REMIND project was the first in Italy to implement an ICP agreed by GPs and specialists and based on the best available evidences. The project compares relevant outcomes and tries to define the roles of primary care, HMCs and CSSs to favor a multidisciplinary approach in the early diagnosis and care of patients with dementia. Preliminary results show that GPs carefully apply the ICP, properly administer the MMSE and improve the appropriateness of patients' referral to specialists. Few (7%) subjects returned to GP with a diagnosis of normal cognitive functionality; only 5% of subjects with MMSE score lower than 24 were considered by the GP not worthy of geriatric or neurological analysis. The shared database improved cooperation between GPs, HMCs and CSSs and the use of MMSE helped GPs in recognizing actual cognitive impairment. The coordinating center allowed a reduction of waiting list of specialist visits.

~REMIND PARTNERS	
P Moser, S Chirchiglia	Milan Health Authority - Directors of districts 1 and 4
G Lacaita, D Sghedoni	Milan Health Authority - Responsible of Primary Care Department
J Bisceglia, C Stellato	Milan Health Authority – Responsible of Home Care Services and Rehabilitation
A Donzelli	Milan Health Authority - Responsible of Educational and Pertinence Service
M Morbin, P Tiraboschi, F Tagliavini	HMC Istituto Neurologico Besta - Neurologists
F Clerici, G Grande, C Mariani	HMC Ospedale Sacco - Neurologists
G Bottini, G Gelosa, S Basilico*	HMC Ospedale Niguarda - Neurologists, *Neuropsycologist
E Scarpini, E Rotondo*	HMC Ospedale Policlinico - Neurologist, *Neuropsycologist
M Magnani, M Falautano*	HMC Ospedale San Raffaele - Neurologist, *Neuropsycologist
E Farina, M Alberoni, F Saibene*	HMC Don Gnocchi S.M Nascente - Neurologists, *Neuropsycologist
C Rosci, M Saetti, E Capitani	HMC Ospedale San Paolo - Neurologists
L Manfredi, A Caporale*	HMC Casa di Cura San Pio X - Neurologists, *Neuropsycologist
V Silani, B Poletti*, A Lafronza*	HMC Istituto Auxologico San Luca - Neurologist, *Neuropsycologists
G. Sacilotto	HMC Ospedale CTO - Neurologist
C Negri Chinaglia, I Engaddi	HMC Pio Albergo Trivulzio - Geriatricians
D Mari, S Damanti, A Porta	HMC Ospedale Policlinico Geriatricians
M Gandolfi, S Vitali	HMC Istituto Geriatrico Redaelli - Geriatricians
A Di Giovanni, S Bressi, C Cusi, M Gasparini	CSS Istituti Clinici Perfezionamento (ICP) - Neurologists
C Bilotta, L Carnaghi, S Dalzocchio, S Schioppa	CSS Istituti Clinici Perfezionamento (ICP) - Geriatricians
L Bovone, M Montani, E Scafuro, U Tamborini, V Pappalepore	Coordinators of General Practitioners

Sin

XLVI CONGRESSO NAZIONALE
10-13 OTTOBRE 2015 – GENOVA

WebPoster