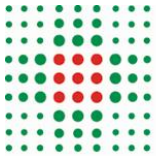
3rd International Seminar of the PRC and EAPC RN, Milan, Italy, 5-6 December 2013

The challenge of evaluating complex interventions. A controlled clinical trial on the Liverpool Care Pathway (LCP).

Massimo Costantini

Palliative Care Unit
IRCCS Arcispedale S. Maria Nuova,
Reggio Emilia (Italy)



SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Ospedaliera di Reggio Emilia

Arcispedale S. Maria Nuova

Istituto in tecnologie avanzate e modelli assistenziali in oncologia
Istituto di Ricovero e Cura a Carattere Scientifico

The rationale

- ✓ A **high proportion** of cancer patients dying in hospital
- ✓ Global evidence about **poor quality** of end-of-life care
- ✓ An **increasing "demand"** of good care at the end of life
- ✓ Evidence show that it is **possible** in the hospices
- ✓ The **right** to receive good palliative care
- ✓ LCP as the more structured end-of-life care **pathway**
- ✓ **Aimed at** transferring the hospice model into hospitals
- ✓ A 2011 **Cochrane systematic review** did not find evidence about its effectiveness

❖Costantini M, BMC Health Serv Res 2011

Primary aim

To evaluate the **effectiveness** of the LCP-I Program in improving the **quality of end-of-life care** provided to **cancer patients** who die on **hospital medical** wards as compared to standard healthcare practices.

Secondary aims

- ❖ specific dimensions of quality of care (from the Toolkit)
- ❖ three symptom scales from the VOICES
- ❖ procedures of care (drugs, interventions, GPs)

❖Costantini M, BMC Health Serv Res 2011

The Italian version of the LCP (LCP-I)

- **developed by** the Regional PC Network - IST Genova
  - ✓ Phase I (Di Leo S et al, Palliat Med 2011)
  - ✓ Phase II (Costantini M et al, Palliat Med 2011 and 2013; Raijmakers N et al, Supp Care Cancer 2012)
- research project **funded by** the Ministry of Health and Maruzza Lefebvre D'Ovidio Foundation-Onlus, Rome
- **primary target**: General Medicine wards
- **version 11** for hospital
- **original clinical documentation** translated into Italian
- **some specificity** in the process of implementation

The Italian version of the LCP (LCP-I)

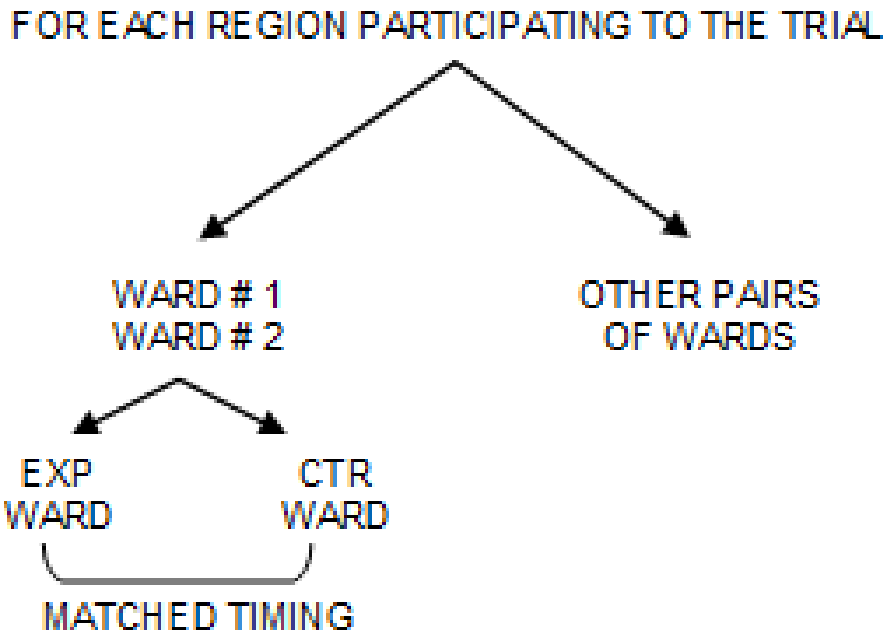
(differences in the process of implementation)

- the referent for LCP-I implementation is a specialized PCT (responsible for the process of implementation)
- we did not use facilitators
- the process of implementation was "manualised"
- 12 hours of training for the ward before starting
- a major role for the PCT (training, tutoring etc.)
- 6 months of experimental implementation (steps 4-8)

❖Costantini M, BMC Health Serv Res 2011

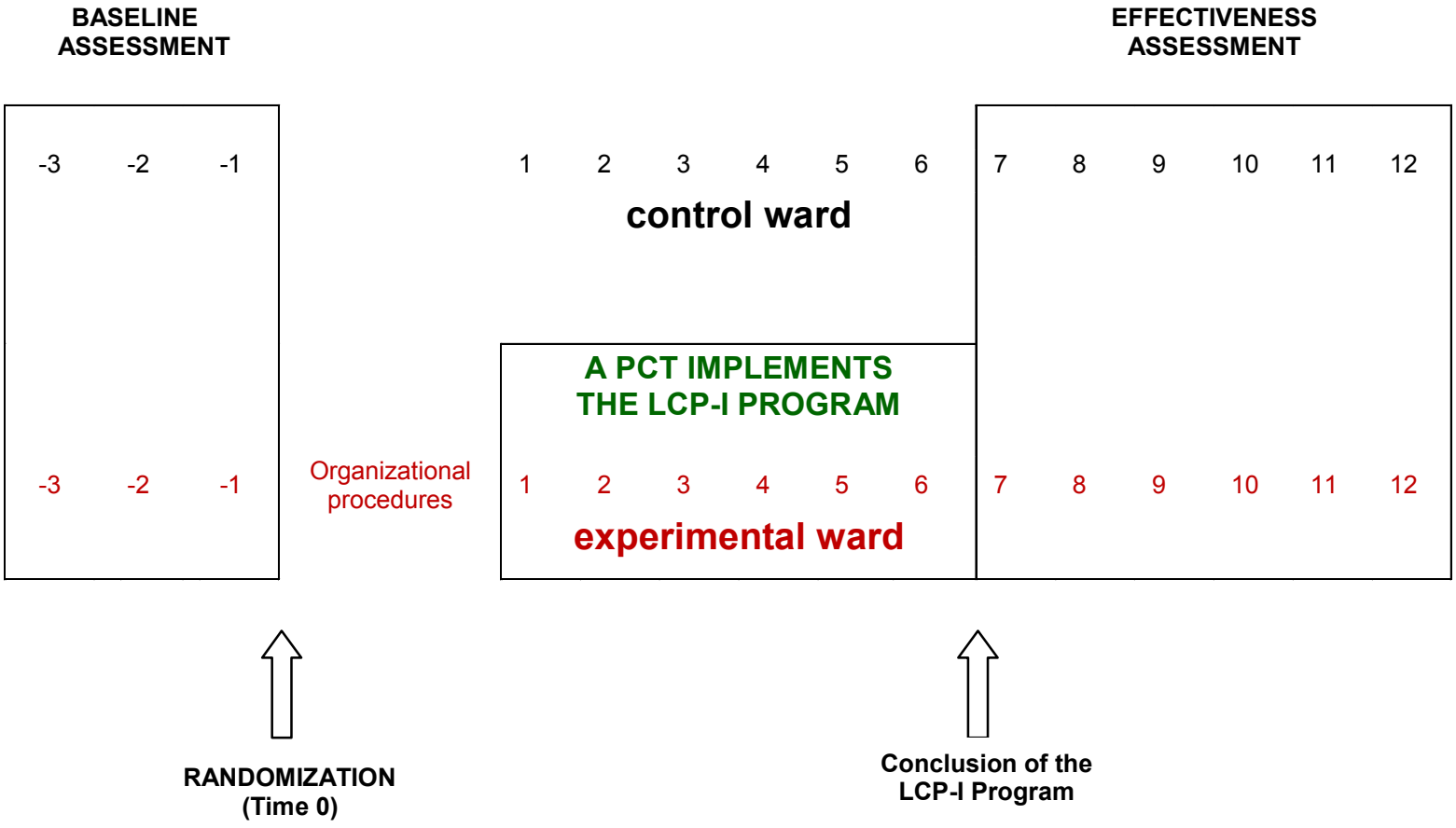
The study design (I)

- randomised cluster trial
- stratified by regions
- matched for assessment period



❖ Costantini M, BMC Health Serv Res 2011

The study design (II)



❖ Costantini M, BMC Health Serv Res 2011

Eligibility criteria

- Ward level
  - ✓ General Medicine ward
  - ✓ at least 25 cancer deaths per year in the ward
  - ✓ consent (hospital, ward, PCT)
  - ✓ only one ward per hospital

- Individual level
  - ✓ died from cancer in the ward
  - ✓ not relative of a doctor-nurse working in the hospital

Procedures of assessment

(for all eligible patients who died from cancer)

- Interview with family members about the last week in ward
  - ✓ the Toolkit after-death bereaved family member interview (Teno J 2001)
  - ✓ 33 questions → seven 0-100 scales (0 the worst care)

  - ✓ the VOICES (Addington-Hall 1995; Costantini 2005)
  - ✓ three symptoms (pain, breathlessness, vomiting)

- From clinical documentation information about drugs and procedures of the last two days of life (Raijmakers N 2012)

- Telephonic interviews with GPs about communication with the ward

The study was underpowered

	the planned trial	the trial
Recruitment	20 wards	16 wards
Pts per cluster	15-20	14-15
ICC	0.01 – 0.05	0.12

- Costantini M, BMC Health Serv Res 2011
- Costantini M, Lancet 2013

Compliance at assessment
(interview with family members)

	LCP-I	CTR
Randomised (N.)	**147**	**161**
Family members interviewed	81%	70%
Refused	16%	25%
Type of interview		
face to face (%)	78%	69%
telephone (%)	22%	31%
Interval from interview to death (days)		
median (range)	105 (59-231)	112 (29-199)
within 2-4 months	65%	65%

Costantini M, et al, Lancet 2013

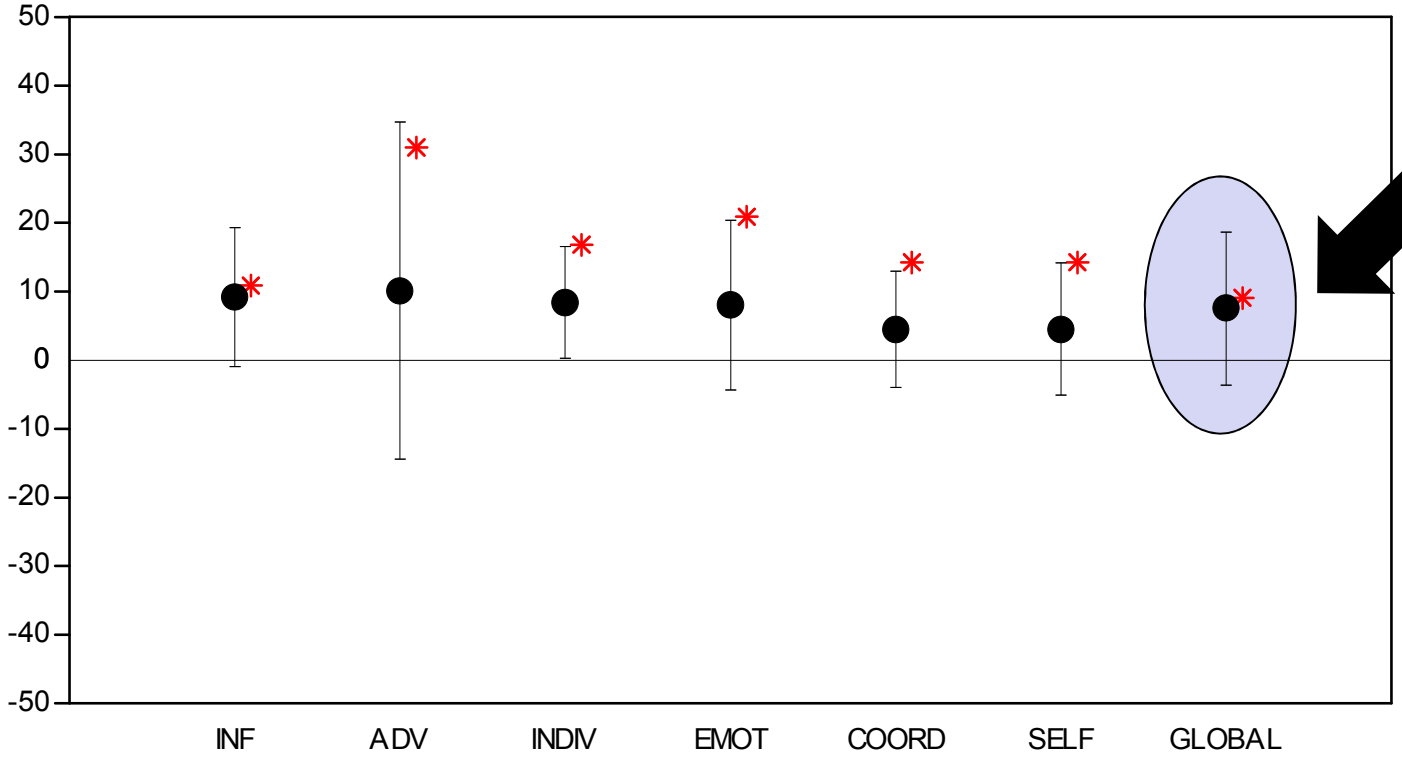
High variability in LCP-I implementation

- One ward received only partially the LCP-I intervention
- High variability in participation to the training programme
- High variability in the use of the LCP-I clinical documentation during the experimental implementation (14% - 75% of cancer deaths on LCP-I)
- After the implementation 3 hospitals stopped using the LCP-I
- High variability in the use of the LCP-I clinical documentation at the end of the experimental implementation (4% - 58% of cancer death on LCP-I)

❖Costantini M, Lancet 2013 (supplementary appendix)

Results – the outcomes (the Toolkit scales)

score differences (EXP - CTR) of the 0-10 scales (means and 95%CI)



Primary end-point
Overall quality of care
P=0.186)

INF (Informing and making decisions)
INDIV (Respect, dignity and kindness)
COORD (Coordination of care)
GLOBAL (Overall quality of care)

ADV (Advance care planning)
EMOT (Family emotional support)
SELF (Family self efficacy)

Costantini M, et al, Lancet 2013

Results – the outcomes (the VOICES scales)

- better control of **breathlessness**
  OR=2.0; p=0.026
- no differences for **pain**
  OR=1.3; p=0.461
- no differences for **nausea-vomiting**
  OR=1.5; p=0.252

Costantini M, et al. Lancet 2013

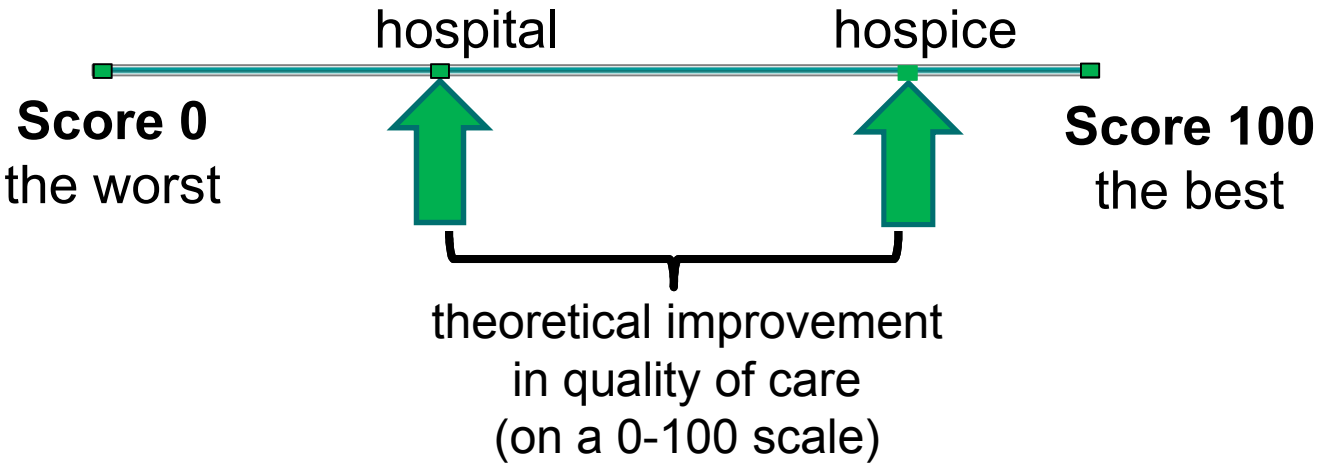
Results – the procedures

- no major changes for potentially inappropriate drugs
  - apart less replacement hormones and vasodilator drugs
- minimal changes for potentially appropriate drugs
  - apart more opioids, morphine and drugs for pulmonary secretions
- no major changes in the interventions
  - apart less blood tests
- no differences in the number of drugs
- subcutaneous route more frequent in the LCP-I arm
  - 8.1% vs. 2.2% in the last 2 days of life
- no major changes in communication with GPs
  - about the death 3% vs. 6%

Costantini M, et al. Lancet 2013

Interpretation of the observed effects

- effect sizes
  - 0.33 (primary end-point)
  - 0.16 - 0.31 (secondary end-points)
- hospital-hospice gap bridged by the LCP-I



Costantini M, et al. Lancet 2013

Estimated differences bridged by the LCP-I

	Hospital CTR	Hospital LCP-I	hospice	%
Overall quality of care	63	71	**90**	28
Informing and making decisions	64	74	**87**	40
Respect, dignity, kindness	70	79	**96**	33
Family emotional support	39	47	**76**	22
Coordination of care	77	81	**90**	34
Family self-efficacy	44	49	**56**	38

Costantini M, et al. Lancet 2013 (table 6)

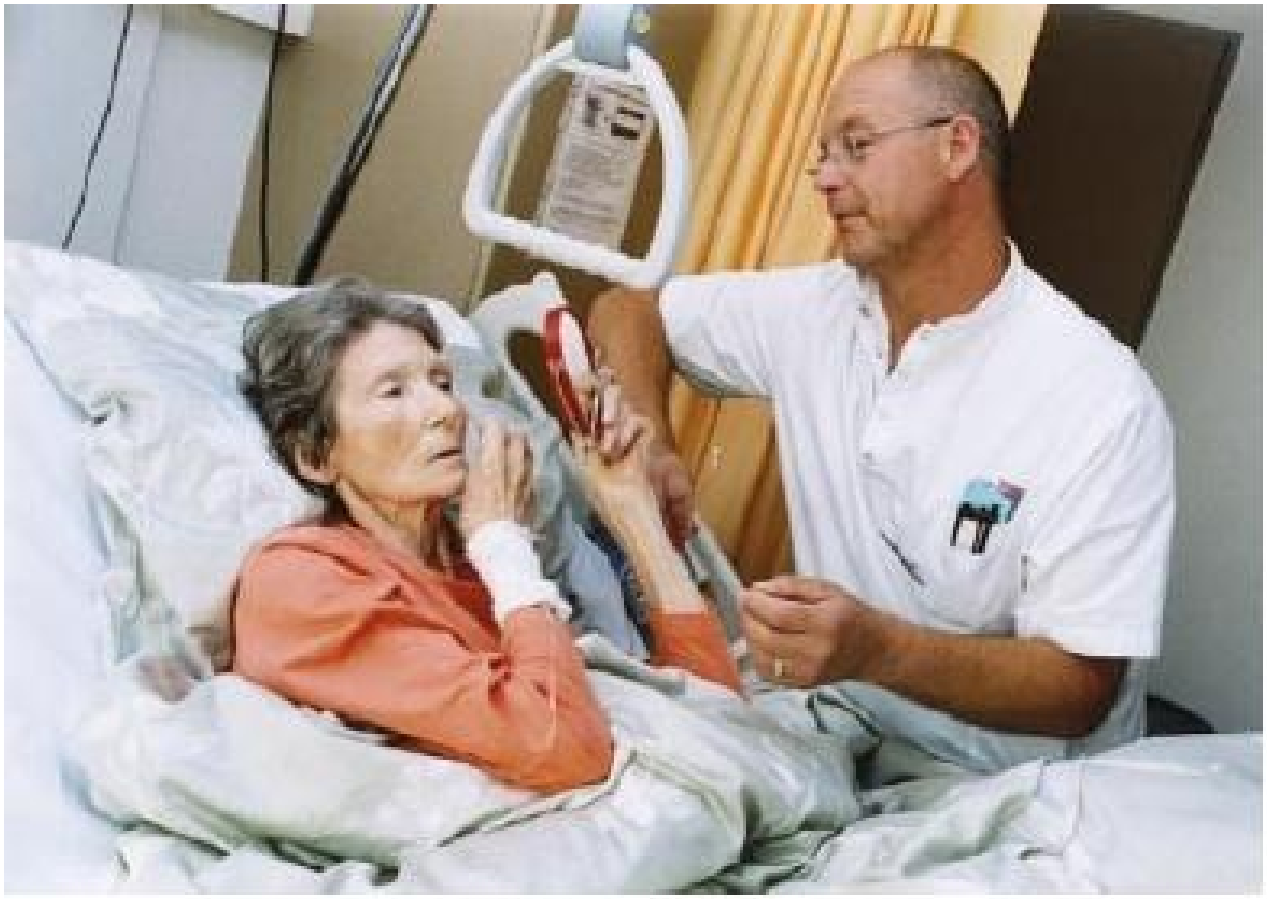
in synthesis (this trial)

- no significant difference in the primary end-point
- we did not observe any negative effects
- all outcomes improved
- minimal changes in procedures of care
- no differences in survival
- small but no negligible magnitude of the effects

Costantini M, et al. Lancet 2013

in synthesis (the future)

- we take into consideration what happened in UK during the dissemination (the Neuberger report)
- the poor quality of care in hospital remains a concern
- we need more research for
  - understanding in which situations (for which patients) the LCP-I might work best
  - what components of the LCP-I work best
  - developing and assessing a wide range of new interventions
- in general, we need more research in health care environment to test the effectiveness of new complex interventions



HENRY ALLES/SPL

Care should be focused on maintaining the patient's dignity and supplying effective palliation

Thanks !