

UNIVERSITÀ DEGLI STUDI DI VERONA

*Problematiche cliniche della nutrizione  
artificiale in geriatria*

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*53 Congresso Nazionale SI GG*

*Firenze 26-30 Novembre, 2008*

# Indicazioni alla Nutrizione artificiale nell'Anziano

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## Pazienti che rifiutano di alimentarsi naturalmente

- Pazienti con grave anoressia, gravi psicopatie, depressione

## Pazienti che non devono mangiare

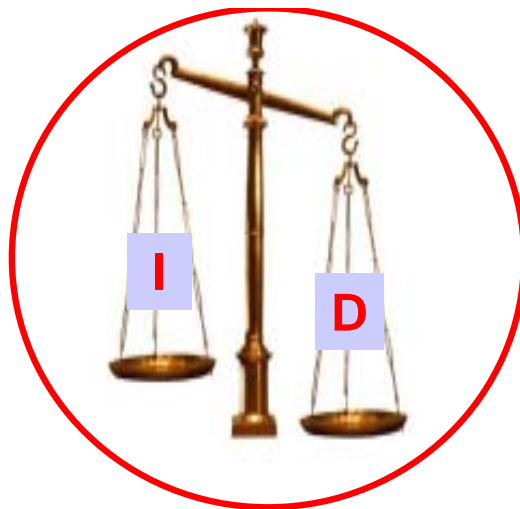
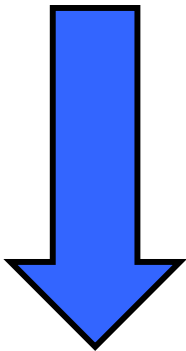
- Immediato decorso post-operatorio negli interventi chirurgici sul tratto digestivo prossimale

## Pazienti che non possono mangiare

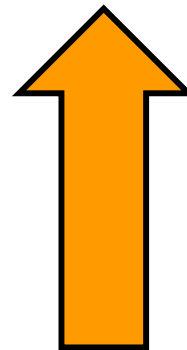
- Pazienti chirurgici (ORL, maxillofacciale, toracica)
- Pazienti in ventilazione artificiale
- Ictus
- Problemi di deglutizione Transitori/ Permanenti

**Per 2 settimane o 1 settimana se presente malnutrizione**

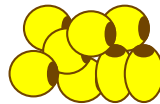
**Introito  
energetico**



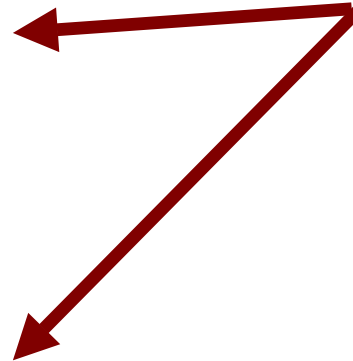
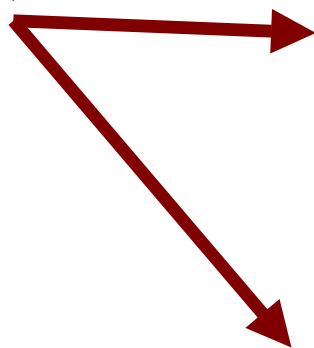
**Dispendio  
energetico**



Tessuto  
Adiposo  
(trigliceridi)  
140.000

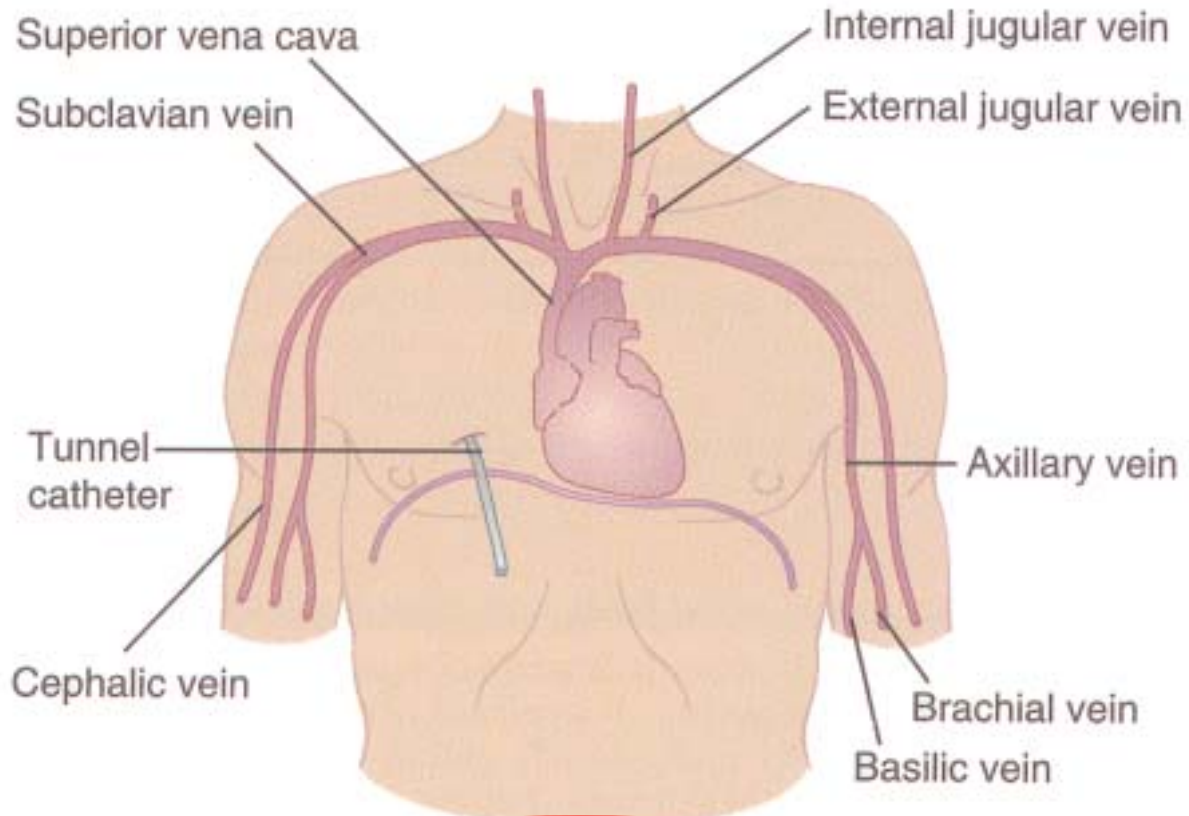


Tessuto  
Muscolare  
(proteine)  
24.000

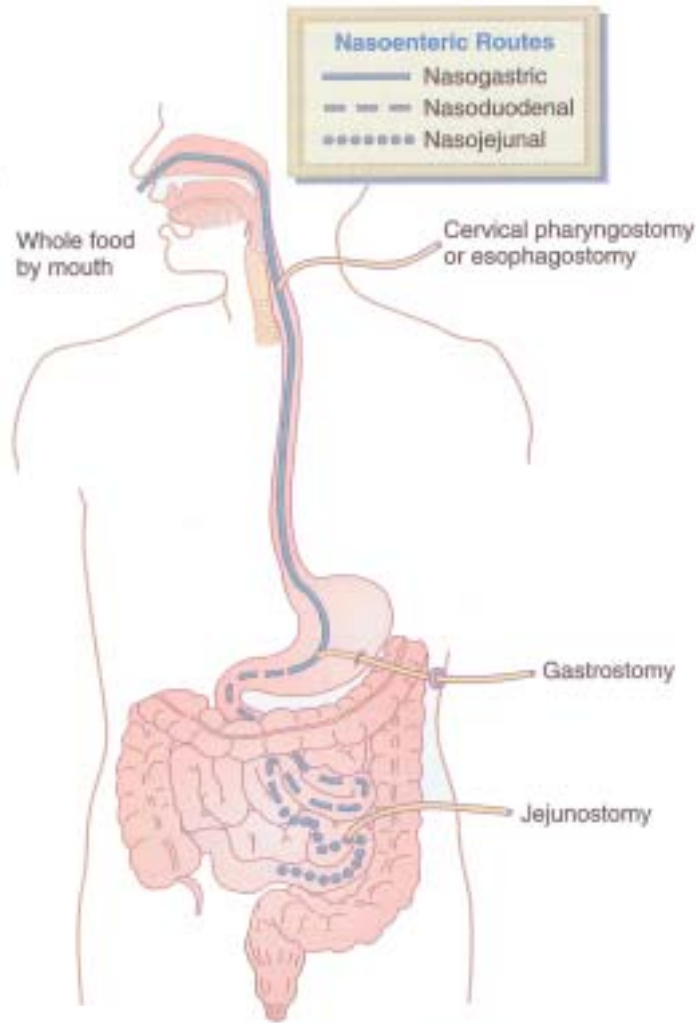


## Vie di accesso per la Nutrizione Artificiale

- Infusione parenterale (v. centrale o periferica)
- Sondino naso-gastrico o naso-enterale
- Gastro o digiunostomia endoscopica percutanea
- Gastro o digiunostomia chirurgica

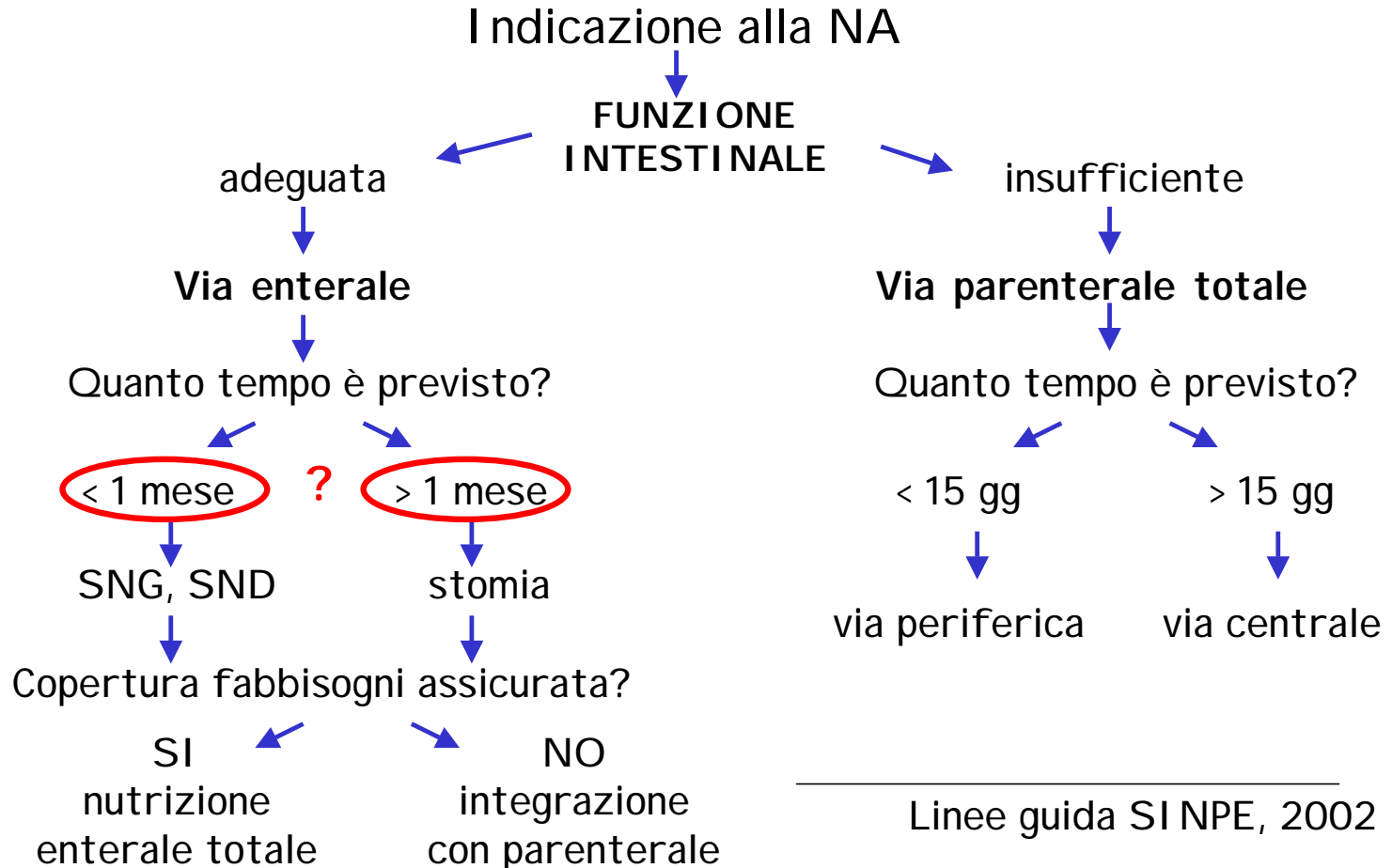


• Venous sites from which the superior vena cava may be accessed.



• Diagram of enteral tube placement.

# Scelta della Via di Somministrazione della Nutrizione Artificiale (NA)



## Nutrizione per sonda: vantaggi

- più semplice
- in genere ben tollerata
- molto meno costosa della TPN
- più sicura (meno side-effects)
- mantiene la funzione ed il trofismo dell'apparato digerente
- previene le infezioni (traslocazione batterica) e l'immunodepressione



## What are the aims of EN therapy in geriatrics?

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- 1• Provision of sufficient amounts of energy, protein and micronutrients.
- 2• Maintenance or improvement of nutritional status.
- 3• Maintenance or improvement of function, activity and capacity for rehabilitation.
- 4• Maintenance or improvement of quality of life.
- 5• Reduction in morbidity and mortality.

# 1- Can EN improve energy and nutrient intake in geriatric patients?

*EN increases energy and nutrient intake in geriatric patient (Ia). PEG feeding is superior to nasogastric feeding in this respect (Ia)*

Studi clinici randomizzati in pazienti con disfagia su base neurologica nei quali è stata confrontata EN per via nasogastrica e via PEG hanno dimostrato che circa il **93-100% del fabbisogno energetico era somministrato con PEG vs il 55-70% con via nasogastrica**

Norton et al, 1996

Park et al, 1992

EN per via nasogastrica durante la notte, a complemento di quella diurna consente un marcato aumento dell'introito energetico

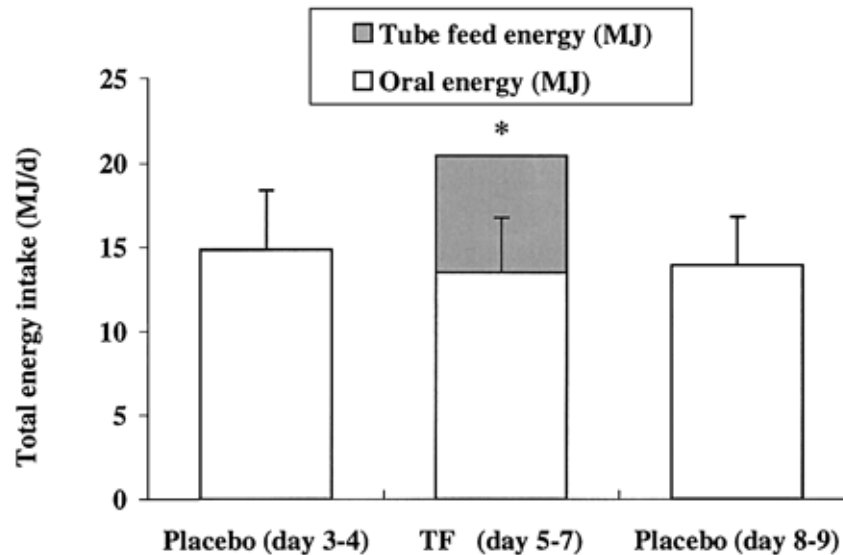
Bastow et al, 1983

Hartgrink et al 1998

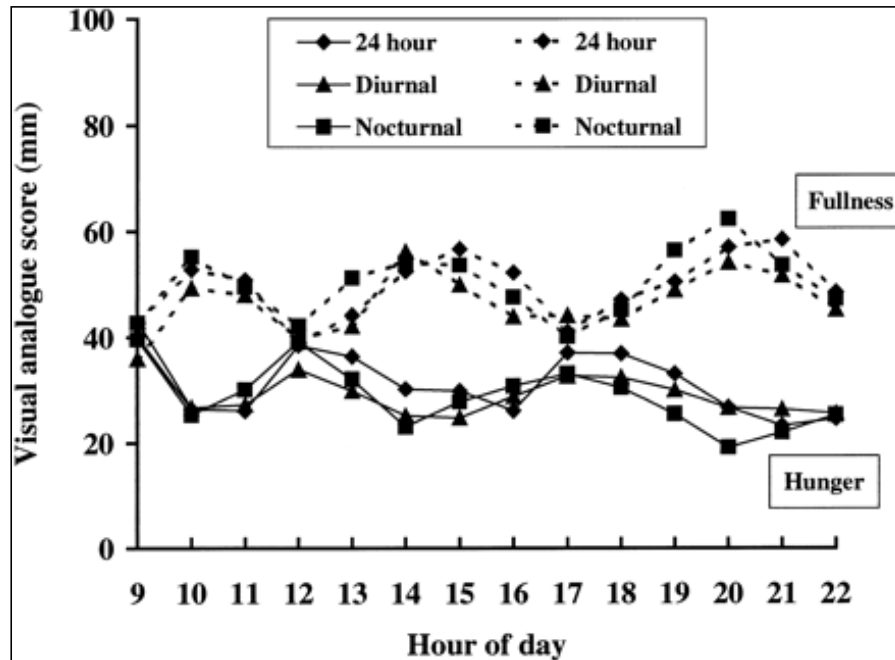
Sullivan et al, 1998

ESPEN Guidelines on enteral nutrition: geriatrics. 2006

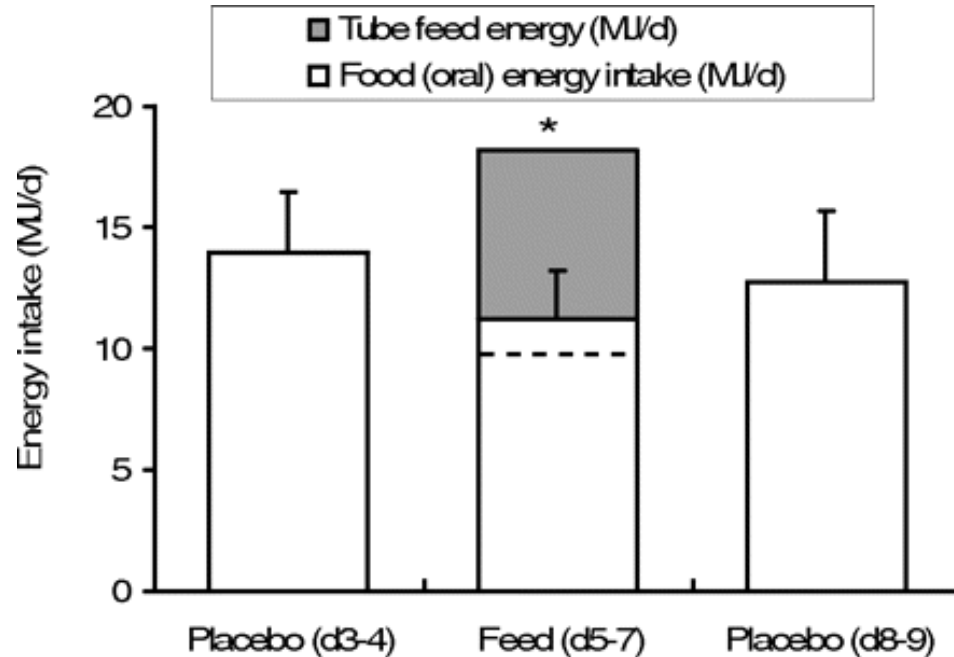
## Total energy intake during continuous tube feeding (TF; all schedules combined) and ad libitum oral consumption in healthy men.



Temporal changes in feelings of hunger and fullness according to a visual analog score during diurnal, 24-h and nocturnal tube feeding (TF) schedules in healthy men.



# Food (oral) and total (oral + tube) energy intake (in MJ) with bolus enteral tube feeding.



## 2- Can EN maintain or improve the nutritional status of elderly patients?

*EN maintains or improves nutritional parameters irrespective of the underlying diseases. The metabolic consequences of ageing which can lead to sarcopenia and a severely reduced nutritional status at the time of tube placement can impair or even prevent successful nutritional therapy (III).*

Numerosi studi eseguiti in pazienti in età geriatrica trattati con EN hanno evidenziato significativo miglioramento di stato nutrizionale, peso e albuminemia

Ciocon et al, 1988; Abitol et al, 2002; Fay et al, 1991

I benefici della EN sullo stato nutrizionale possono essere limitati da possibili complicanze della stessa, così come possono essere migliorati dalla contemporanea mobilizzazione del paziente

ESPEN Guidelines on enteral nutrition: geriatrics. 2006

## 5- Does EN improve survival in geriatric patients?

*In patients who need TF due to the severity of disease, an increase in survival **is not proven**.*

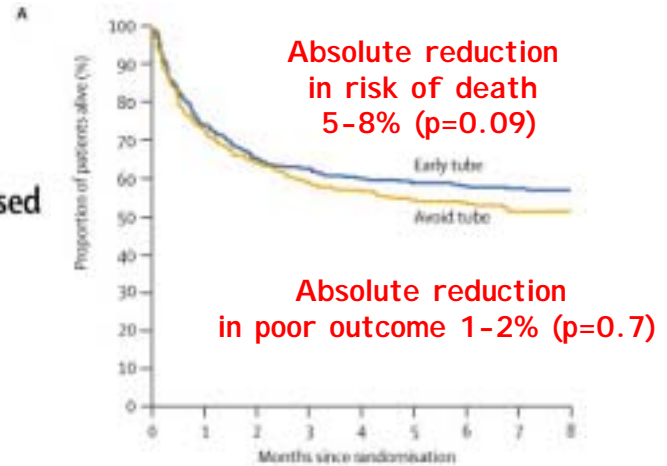
# THE LANCET

Effect of timing and method of enteral tube feeding for dysphagic stroke patients (FOOD): a multicentre randomised controlled trial

The FOOD Trial Collaboration\*

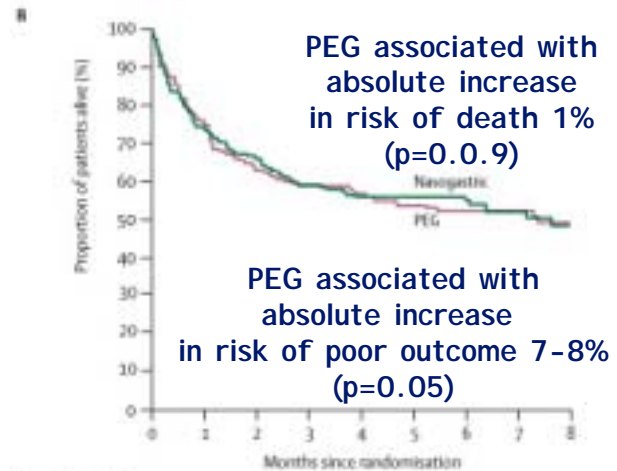
**A-Early (7 days) vs avoid tube study:  
859 subjects (76±11 years)**

**B-PEG vs nasogastric tube study:  
321 subjects (76±10 years)**



Number at risk:

Avoid tube	430	314	276	254	245	233	169	96	66
Early tube	429	318	281	268	257	251	199	125	88



Number at risk:

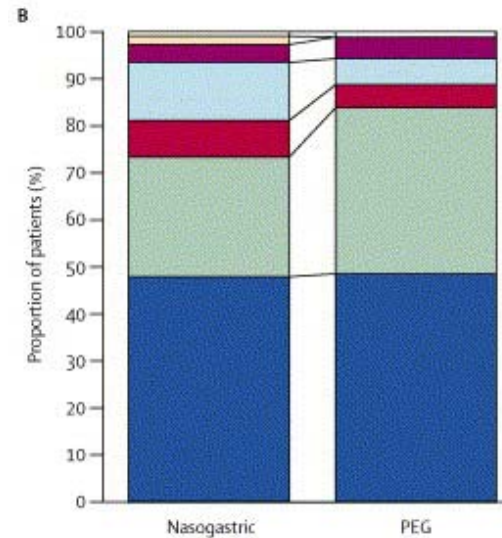
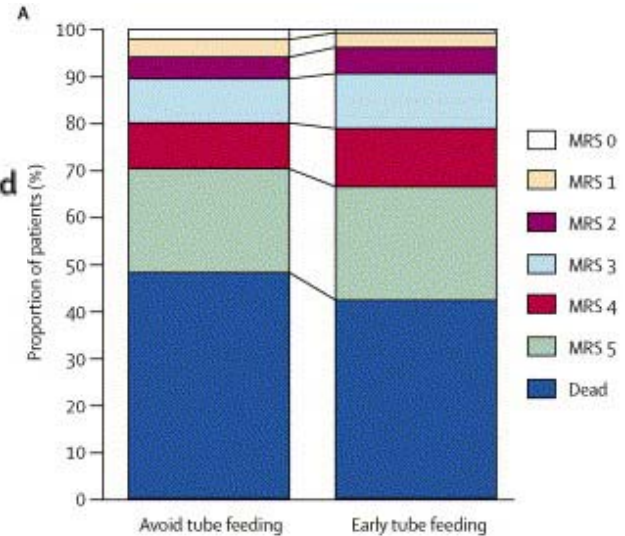
Nasogastric tube	159	118	106	94	89	87	61	36	24
PEG tube	162	123	103	95	92	85	62	38	24



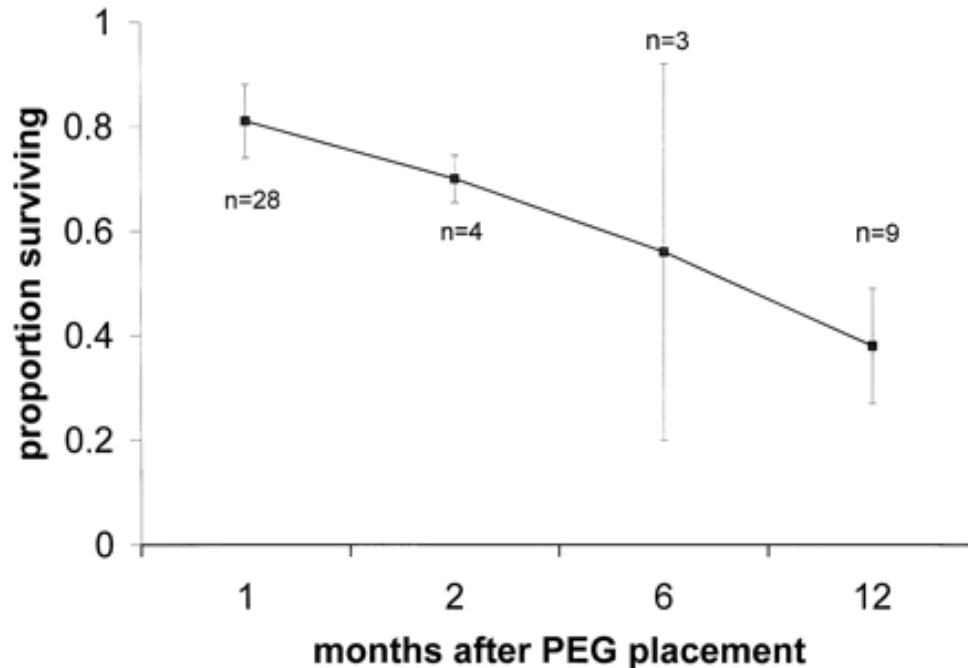
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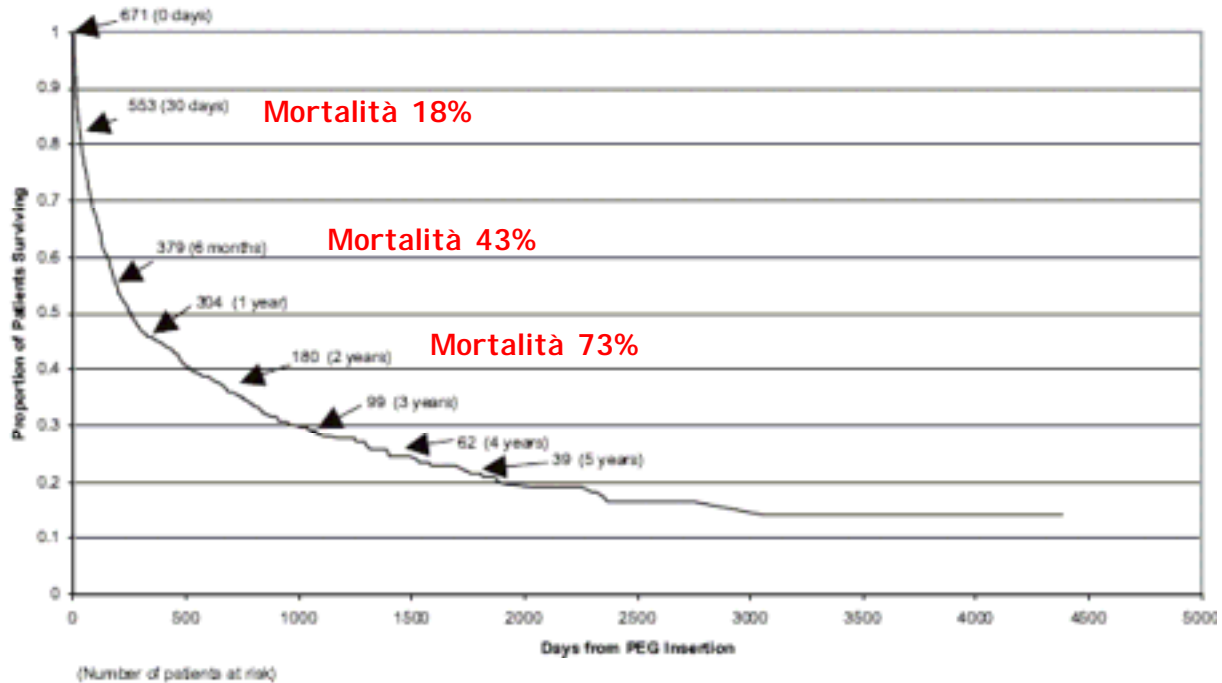
The FOOD Trial Collaborators<sup>1</sup>



Pooled proportion of subjects surviving 1, 2, 6, and 12 months after placement of a percutaneous endoscopic gastrostomy tube.

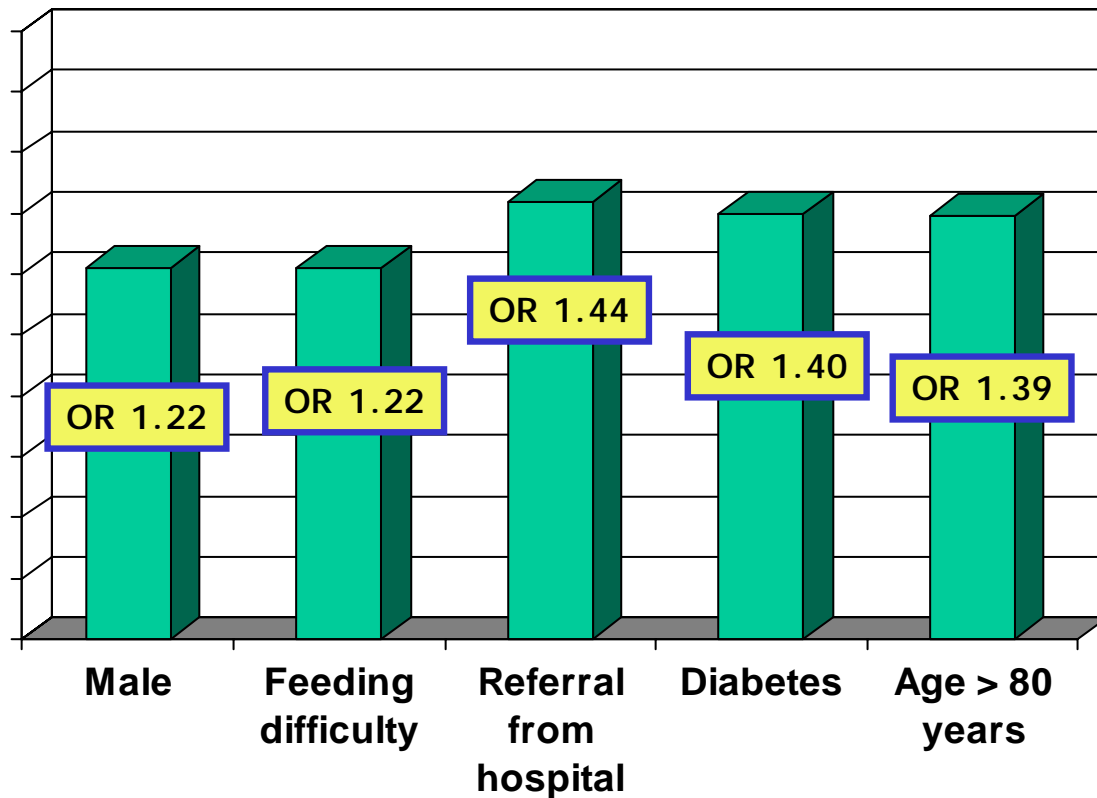


# Kaplan-Meier survival curve of patients undergoing gastrostomy insertion



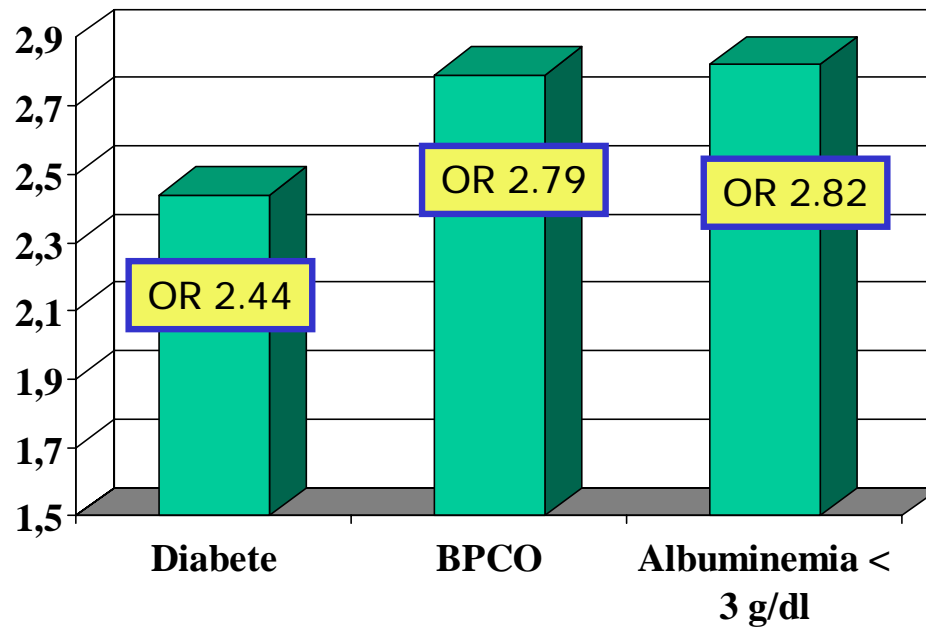
Rimon et al 2005

## Cox regression of survival after PEG insertion in 674 patients



Rimon et al 2005

Risk factors for mortality within 30 days of PEG in hospitalized patients (multivariate analysis)



Lang a et al 2004

## Is EN indicated in dementia?

*ONS or TF may lead to an improvement in nutritional status in demented patients. In early and moderate dementia ONS—and occasionally TF—may contribute to ensuring an adequate energy and nutrient supply and to preventing undernutrition from developing; they are therefore recommended (C). In those with terminal dementia, TF is not recommended (C). The decision in each case must be made on an individual basis.*

**TF may be useful in some demented patients.  
The following aspects have to be considered in  
decision-making:**

- presumed or previously expressed wishes of the patient with respect to TF
- severity of the disease
- the individual prognosis and life expectancy of the demented patient
- the anticipated quality of life of the patient with or without TF
- the anticipated complications and impairments due to TF
- the mobility of the patient

# Quality improvement report

## Using rapid-cycle quality improvement methodology to reduce feeding tubes in patients with advanced dementia: before and after study

### Components of in-service training

Review of medical literature on burdens and benefits of tube feeding in patients with dementia  
Discussion of advance directives  
Linking advanced dementia to palliative care  
Explanation of quality improvement project  
Assignment of role in project



# Quality improvement report Using rapid-cycle quality improvement methodology to reduce feeding tubes in patients with advanced dementia: before and after study

Specialties targeted

Speech pathology

Nutrition

Gastroenterology

Nurse managers

Case managers

Primary care physicians

Hospitalists (physicians specialising in inpatient care)

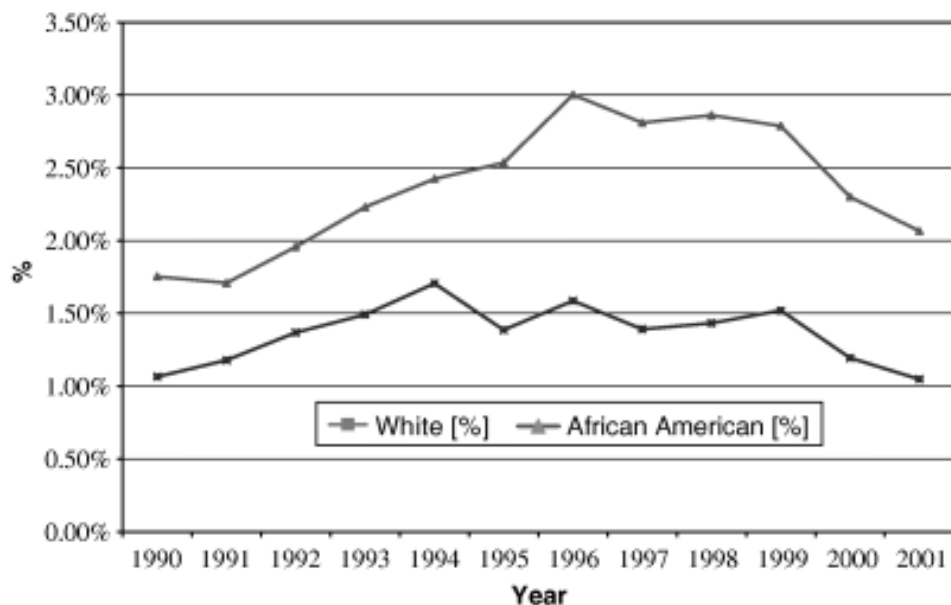
Ethics committee

Administration

## Feeding tube placement before and after quality improvement interventions

Variable	March-September 2002	March-September 2003	Change in proportion (95% CI)*
No of hospital admissions	19 399	20 468	
No (%) of patients given feeding tubes	71 (0.37)	27 (1.3)	0.002 (0.001 to 0.003)
No of charts located for review	58	27	
No (%) of patients with dementia given feeding tubes	40 (69)	8 (30)	0.393 (0.145 to 0.581)
No (%) of patients with dementia and advance directive refusing artificial feeding given feeding tubes	8 (14)	4 (15)	-0.01 (-0.17 to 0.15)

## Proportion of Caucasian and African-American patients with dementia who received a percutaneous endoscopic gastrostomy (PEG) tube, fiscal years (FY) 1990-2002.



Braun U et al 2005

More than 1/3 of severely cognitively impaired residents in US nursing home have tube feeding (1999). Tube feeding is independently associated with residents' clinical characteristics, and the nursing home fiscal, organizational and demographic features  
Mitchell et al, JAMA 2003

## Is EN indicated in geriatric patients with neurological dysphagia?

In geriatric patients with severe neurological dysphagia, EN is recommended in order to ensure energy and nutrient supply and, thus, to maintain or improve nutritional status (A).

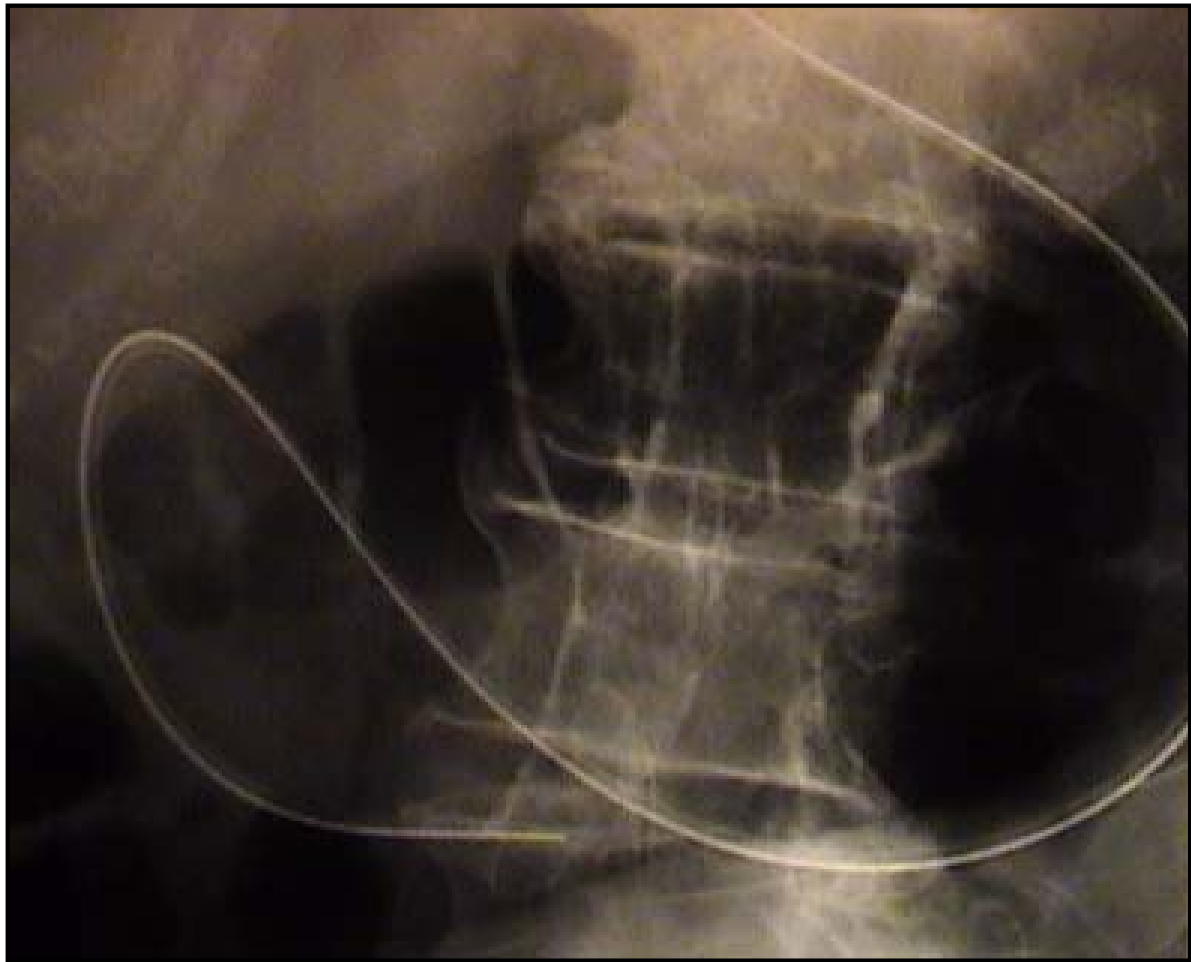
For long-term nutritional support PEG should be preferred to NGT, since it is associated with less treatment failures, better nutritional status (A), and it may also be more convenient for the patient.

In patients with severe neurological dysphagia TF has to be initiated as soon as possible (C).

## Problemi più comuni durante NE

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- Aspirazione nelle vie aeree
- Ostruzione del sondino
- Infezioni del o dal sondino
- Scarsa tollerabilità soggettiva
- Diarrea
- Emorragia gastrointestinale
- Ischemia intestinale
- Complicanze metaboliche
- Iperidratazione - disidratazione
- Underfeeding - overfeeding



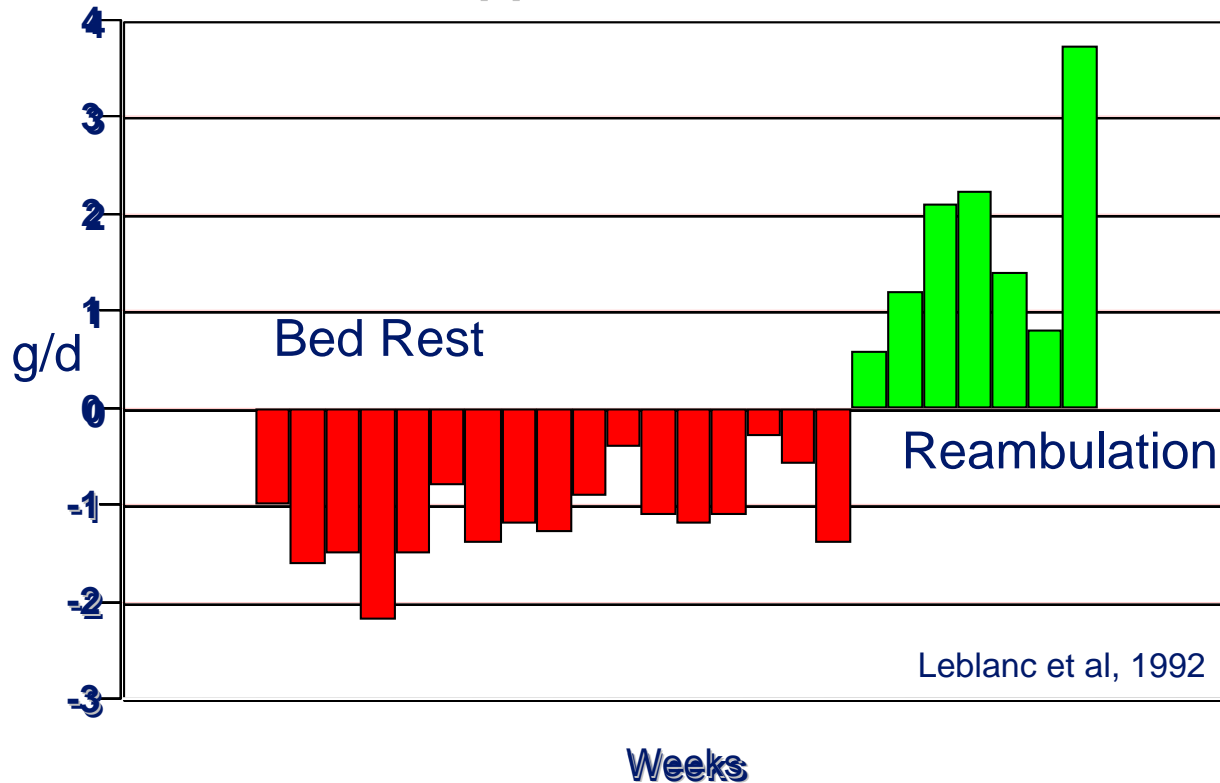
## NE: pro e contro dell'accesso duodeno-digiunale

VANTAGGI	SVANTAGGI	COMPLICANZE
Poco costosa	Facile dislocamento	Sinusite, otite, mucosite
Accesso diretto al tenue	Può essere difficile da gestire a domicilio	diarrea
Reflusso GE, aspirazione meno frequenti	Posizionamento specialistico	

### Posizionamento

- Endoscopico
- Passivo
- Fluoroscopico

# Nitrogen balance during bed rest and during reambulation in subjects on energy supplementation





## Decision making concerning Tube Feeding in the elderly: The following questions should be asked

Does the patient suffer from a condition that is likely to benefit from enteral nutrition?

Will nutrition support improve outcome and or accelerate recovery ?

Does the patient suffer from incurable disease, but one in which QoL and wellbeing can be maintained or improved by EN?

Does the anticipated benefit outweigh the potential risk ?

Does EN accord with the expressed or presumed will of the patient, or in case of incompetent patients, of his/her legal representative

Are there sufficient resources available to manage EN