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"La gestione delle infezioni respiratorie al domicilio e in RSA: se e quando ricoverare"

P.A.Bonati – C.D'anastasio

L'invecchiamento di per sé è già da considerarsi un fattore di rischio

Anziani: fattori di rischio e infezioni

- **I deficit funzionali: demenza, incontinenza, cadute;**
- **La ridotta mobilità e la fragilità cutanea associata a patologie, come diabete ed insufficienza venosa, possono favorire la formazione di *ulcere* e *piaghe da decubito* suscettibili alle infezioni;**
- **La non autosufficienza.**

Marchi L. 2008 mod.

Anziani: poli medicazione e infezioni

- **Mediamente un anziano assume 6 - 8 farmaci con conseguenti effetti collaterali:**
- **Sedativi della tosse e benzodiazepine favoriscono la bronco aspirazione;**
- **Gli anti acidi e gli anti H2 interferiscono con la motilità gastrica predisponendo alle infezioni;**
- **I Ca+ antagonisti, i β-2 agonisti e le benzodiazepine riducono il tono degli sfinteri gastrici (soprattutto quello esofageo) con rigurgiti e conseguente bronco aspirazione;**

Marchi L. 2008 mod.

fattori importanti nella polmonite in NH:

- il ruolo dell'igiene buccale
- le polmoniti da aspirazione

Reducing bacterial colonization of the oropharynx is considered a potential target for prevention of NHAP

(Yoneyama T et al 2002, Adachi M et al 2002-2007)

- Aggressive oral care have uniformly shown a reduced risk of pneumonia in the intervention group: intervention from **daily** mechanical brushing to **weekly** professional cleaning

Pneumonia Versus Aspiration Pneumonitis in Nursing Home Residents: Diagnosis and Management

Joseph M. Mylotte, MD,†§ Susan Goodnough, RN, BS,* and Bruce J. Naughton, MD,‡∥*

JAGS 51:17–23, 2003
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The importance of making the distinction:

- AP is not infectious in the initial stages but physicians tend to treat as infectious.... and administer antibiotics
- Many episodes of AP will resolve with supportive care only

Infezioni delle vie aeree superiori ed inferiori in R.S.A.

- La polmonite e l'influenza sono tra le cause che frequentemente causano la morte dell'anziano (settima tra pazienti di età compresa tra 65 e 74, ma è addirittura quarta per età superiori a 80 aa);
- Difficile la diagnosi differenziale tra bronchiti e polmoniti: il ricorso all'esame radiografico sovente non è immediato;
- Difficoltà ad eseguire esami colturali dell'escreato perché il paziente non collabora;

Marchi L. 2008 mod.

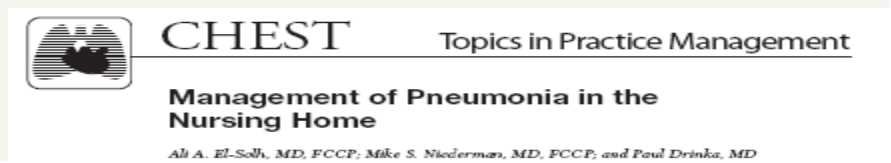
Infezioni delle vie aeree superiori ed inferiori in R.S.A.

- **Manifestazioni cliniche atipiche: febbre assente o inferiore rispetto alle aspettative, stato confusionale, ipo - iper ventilazione, leucocitosi normale o ridotta, ipo - iper glicemia, acidosi metabolica, scompenso cardiaco;**

Marchi L. 2008 mod.

COSTI ?

- It is estimated that the number of **older people who will require NH care will reach 5.3 million in 2030** (Knickman JR et al.2002)
- Assuming that the incidence of pneumonia in this population remains constant, **the total case of NHAP will approach 1.9 million episodes annually**
- Currently the **incidence** of NHAP **varies from 0.3 to 2.3 episodes per 1000 resident care days** (Mehr DR et al. 2001)
- According to the latest statistcs NH residents account for **10% to 18% of alla patients hospitalized for pneumonia,** with an **average hospital charge** of approximately **10.000 $ per admission** (Konetzka RT et al. 2004)



Common Etiologies of NHAP

• Gram negative bacilli	• UP to 55
• Streptococcus pneumoniae	• UP to 48
• Staphylococcus aureus	• UP to 33
• Haemophilus influenzae	• UP to 22
• Viruses	• UP to 10
• Pseudomonas Aeruginosa	• UP to 7
• Legionella pneumophila	• UP to 6
• Mycoplasma pneumoniae	• UP to 1

El-Solh AA et al. 2001,
Muder RR 1998

Differenze fra CAP e NHAP ?

l’ eccesso di mortalità nei pz con NHAP non è attribuibile a differenti pattern microbici

MA

ad una maggior complessità e gravità clinica dei parametri legati alla comorbilità, tanto che la polmonite viene frequentemente considerata e affrontata come un evento terminale

Ewig S. et al. 2012

Risultati dello studio

Healthcare **A**ssociated Infections
in European **L**ong **T**erm Care Facilities

Progetto HALT2 (strutture residenziali- 2013):

vengono comunicati alcuni dati aggregati regionali dello studio:

CRA PARTECIPANTI REGIONE EMILIA ROMAGNA TOTALE CRA SUL TERRITORIO REGIONE EMILIA ROMAGNA = 363 TOTALE CRA PARTECIPANTI - ITALIA = 237	**87**
TOTALE POPOLAZIONE IN STUDIO REGIONE EMILIA ROMAGNA	**5853**
PREVALENZA INFEZIONI	**5,7%**
PREVALENZA PAZIENTI CON TRATTAMENTO ANTIBIOTICO	**5,3%**
NUMERO TOTALE ICA	**336**
LOCALIZZAZIONE ICA RESPIRATORIE **LOCALIZZAZIONE ICA IVU** **LOCALIZZAZIONE ICA CUTE, TESSUTI MOLLI..** **LOCALIZZAZIONE ICA OCCHIO, ORECCHIO, NASO** **LOCALIZZAZIONE ICA ALTRO**	**40%** **33%** **19%** **4%** **4% ,**

CONTROLLO DELLE INFEZIONI

La miglior cura… la prevenzione ?

Ogni R.S.A. dovrebbe gestire il controllo e la prevenzione delle infezioni.

Esso dovrebbe comprendere:

- Costituzione del C.I.O.

- Sorveglianza delle infezioni

- Linee Guida

- Formazione del personale

- Controllo dell'utilizzo degli antibiotici

- Programma vaccinale

Marchi L. 2008 mod.

La miglior cura… la prevenzione ?

Il programma vaccinale non deve essere indirizzato solo verso i degenti, ma soprattutto verso gli operatori che spesso, invece, evitano di eseguire.

In particolare:
- Vaccinazione anti influenzale
- Vaccinazione anti pneumo coccica etc

Marchi L. 2008 mod. .

La miglior cura… la prevenzione ?

- Immunization with pneumococcal polysaccharide vaccine and annual influenza vaccination (Harper SA et al. 2005)…….**however the effectiveness of these vaccines decreases with increasing age and among individuals with comorbid conditions……**

- The 23-valent pneumococcal polysaccharide vaccine has been shown to confer protection against all-cause pneumonia and pneumonia-related mortality in NH residents, **although the protective efficacy of the vaccine did not translate into a reduction in all-cause mortality** (Mruyama T et al. 2010)

Se il trattamento “appropriato” inizia rapidamente in NH sia la morbilità associata che la mortalità si riducono significativamente

Recent guidelines recommend a fluoroquinolone (gatifloxacin, levofloxacin or moxifloxacin) or amoxicillin/clavulanic acid plus a macrolide for initial treatment of NHAP in the nursing home.

Mylotte, Joseph M[1 2] Drugs & Aging: 2006 - Volume 23 - Issue 5 - pp 377-390 Therapy In Practice

In the absence of outcome data pointing to a superiority of one regimen over another ….

The choice of treatment depends on

- knowing the potential pathogens
- Likelihood of antibiotic resistance
- Ease of administration
- Adverse effect profiles of various agents

- ……**the 75 th percentile for duration of therapy of NHAP within the NH was 10 days, but the optimal duration of antibiotic treatment is unknown**

(Naughton BJ et al. 2000)

Quali barriere rallentano od impediscono un intervento tempestivo ?

- Difficoltà nell'avere a disposizione rapidamente il farmaco appropriato
- Inadeguatezza dello staff di assistenza
- Scarse notizie circa la volontà di essere o meno ricoverato
- Assenza di un "living will" per anziani affetti da demenza di grado moderato-severo

Dosa D. 2005

Antibiotics and mortality in patients with lower respiratory infection and advanced dementia.

van der Steen JT et al. J Am Med Dir Assoc. 2012 Feb;13(2):156-61. Epub 2010 Oct 8.

- **94 residents with advanced dementia who developed 109 episodes**.
- 10 day mortality was 48%, and 6-month mortality was 74%. Antibiotics were used in 77% of episodes.
- In our sample of male nursing home residents with advanced dementia and lower respiratory infection, mortality was substantial despite antibiotic treatment. **Antibiotics prolonged life but in many cases only for several days.** Treatment decisions should take into account that **antibiotics may delay death but may also prolong the dying process,** indicating a need for accurate prediction of mortality and study of characteristics that may alter effectiveness of antibiotics.

Severity Index Pneumonia

Fattori demografici

Età M (anni)	
F (anni)	**- 10**
Deg. casa di riposo	**+ 10**

Segni alla prima osservazione

Alterazioni stato mentale	**+ 20**
Freq. Resp. > 30 atti/min	**+ 20**
P.A. < 90 mmHg	**+ 20**
Temp. <35 °C o > 40 °C	**+ 15**
Freq. Card. > 125 b/min	**+ 10**

Patologie associate

Tumori	**+ 30**
Epatopatie	**+ 20**
Insuff. cardiaca	**+ 10**
Insuff. renale	**+ 10**
Mal. cerebrovasc.	**+ 10**

Esami di laboratorio

pH < 7.35	**+ 30**
Aumento azotemia	**+ 20**
Natremia < 130 mEq/L	**+ 20**
Glicemia > 130 mmol/L	**+ 10**
Ht < 30%	**+ 10**
pO2 < 60 mmHg	**+ 10**

An interactive tool for the Pneumonia Severity Index from the Assessment of the Variation and Outcomes of Pneumonia: Pneumonia Patient Outcomes Research Team Final Report. AHRQ Publication No. 97-N009.

STRATIFICAZIONE IN BASE AL RISK SCORE

Classe	Score	Mortalità %	Trattamento
I	/	0,1	Domiciliare
II	≤ 70	0,6	Domiciliare
III	71-90	2,8	Ospedaliero
IV	91-130	8,2	Ospedaliero
V	≥ 130	29,2	Ospedaliero

Utilità dei sistemi di score prognostici ?

- **CURB – 65** (CONFUSION, UREMIAE, RATE RESPIRATORY, LOW BLOOD PRESSURE, 65 YEARS AGE)
- **PNEUMONIA SEVERITY INDEX** (età > 50, alterazione stato mentale, frequenza resp. >30/min, PAS < 90 mmHg, temperatura < 35° o > 40°, storia di neoplasia, scompenso cardiaco, malattia cerebrovascolare, renale, epatica,se almeno 1 si….. procedere allo step 2 per cui aumenta la classe di rischio fino al livello 5)

Non sono stati validati specificamente per la popolazione anziana

Falcone M. et al.2012

…….ricovero ospedaliero?

- Evidenze sempre più significative hanno dimostrato che il ricovero in H di un anziano con NHAP ha determinato scarsi o nulli miglioramenti sulla mortalità o sulla morbilità rispetto a coloro che sono stati trattati in NH.

ANZI SPESSO in seguito al ricovero

- le evidenze sottolineano un maggior rischio di declino funzionale, delirium, formazione di LdD

- Si, se la frequenza respiratoria è > 40

Dosa D. 2005

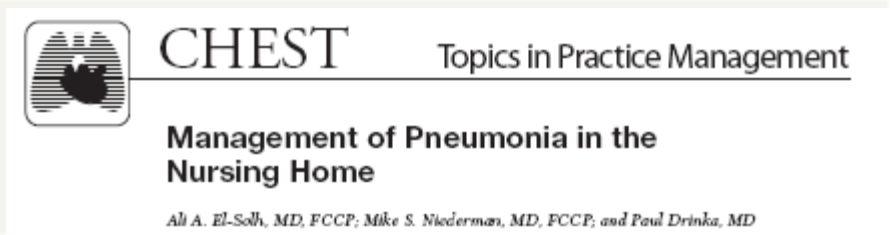
Proposed Guidelines for Hospitalizing NH patients with Pneumonia (Hutt E. et al. 2002)

Presence of any two symptoms

- Oxygen saturation < 90% on room air at sea level
- Systolic BP < 90 mmHg or 20 mmHg < baseline
- Respiratory rate > 30 breath/min or 10 breaths /min >baseline
- Increase oxygen requirement by 3L/min or more than baseline
- Uncontrolled COPD, congestive heart failure or DM
- Altered mental status
- New or increased agitation

If the facility cannot provides

- Vital sign assessment every 4 hours
- Laboratory access
- Parental hydration
- Two licensed nurses per shift



Available online at www.sciencedirect.com
Journal of Hospital Infection
journal homepage: www.elsevierhealth.com/journals/jhin

Nursing home residence is the main risk factor for increased mortality in healthcare-associated pneumonia

P. Depuydt[a,b,*], B. Putman[c], D. Benoit[a], W. Buylaert[d], P. De Paepe[b,d]

- HCAP was associated with unfavourable clinical evolution and increased hospital stay…….but

- **not a diagnosis of HCAP but rather a diagnosis of nursing home peumonia was an independent predictor for mortality……**
- **stresses the importance of comorbidity and performance status as contributors to adverse outcome in pneumonia**
- **Nursing Home Pneumonia patients are more likely to die in the hospital than patients with CAP have been explained by the higher burden of comorbidity, functional dependency and frailty**

(Marrie TJ et al.1997, Meehan TP et al. 2000)

NHAP when it occurs as an expected terminal event?

- Observational studies have failed to demonstrate that antimicrobial treatment achieves life prolongation in this frail population (D'agata E. et al 2008, Morrison RS et al 200, Van der Steen JT et al. 2002)
- There is increased uncertainty about whether antimicrobial therapy promotes symptomatic relief: level of discomfort was not different in residents dying of pneumonia wether antimicrobial therapy was prescribed or not

Optimal care of NHAP includes:
“ prudent consideration of curative treatment, treatment to relieve discomfort, and supportive treatment in view of expected and desirable outcomes” (Van der Steen JT et al. 2004)

End-of-Life Transitions among Nursing Home Residents with Cognitive Issues

- Qualsiasi decisione circa il trasferimento dell'anziano in struttura presso una diversa sede di cura dovrebbe scaturire da una riflessione sugli obiettivi e sui rischi e benefici di tale passaggio

Pedro Gozalo et al. N Engl J Med 2011;365:1212-21

Inappropriatezza del ricovero

Fattori associati alla scarsa appropriatezza della decisione di ricovero:

- Scarsa qualità dell'assistenza contribuiva alla necessità del ricovero
- Servizi necessari erano disponibili ed utilizzabili in ambito ambulatoriale
- La condizione clinica non richiedeva l'ospedalizzazione

Saliba D et al. J Am Geriatr Soc 2000;48:154-63.

The JAMA Network

From: **Effect of a Clinical Pathway to Reduce Hospitalizations in Nursing Home Residents With Pneumonia: A Randomized Controlled Trial**

JAMA. 2006;295(21):2503-2510. doi:10.1001/jama.295.21.2503

Table 2. Summary of Weighted Outcome Variables and the Differences in 10 Clinical Pathway and 9 Usual Care Nursing Homes*

Outcomes	Weighted Mean (95% CI)			*P* Value
	Clinical Pathway (n = 314)	Usual Care (n = 347)	Difference	
Hospitalizations, %†	8 (4 to 12)	20 (15 to 26)	12 (5 to 18)	.001
Hospital days per resident	0.79 (0.45 to 1.13)	1.74 (1.17 to 2.3)	0.95 (0.34 to 1.55)	.004
Visits to emergency department without admission, %	1.2 (–0.2 to 2.5)	1.6 (–0.6 to 3.8)	0.4 (–1.9 to 2.8)	.72

Questo studio randomizzato dimostra che la maggior parte dei pz. con polmonite può essere curato in CRA senza un significativo effetto su

- mortalità,
- capacità funzionali
- qualità di vita correlata alle condizioni di salute.

37 (16%), 2 of 43 (5%), and 3 of 36 (8%) for residents in each of the 10 nursing homes; and in the usual care group, rates were 6 of 43 (14%), 14 of 43 (33%), 11 of 43 (26%), 7 of 36 (19%), 10 of 53 (19%), 2 of 24 (8%), 7 of 23 (30%), 8 of 30 (27%), and 11 of 52 (21%) for residents in each of the 9 nursing homes.

‡Defined as heart rate of 100/min or less, systolic blood pressure of at least 90 mm Hg, respiratory rate of 24/min or less, and temperature of 37.2°C or less.

Date of download: 9/10/2013

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Gozalo P et al. N Engl J Med 2011;365:1212-1221

The NEW ENGLAND JOURNAL of MEDICINE

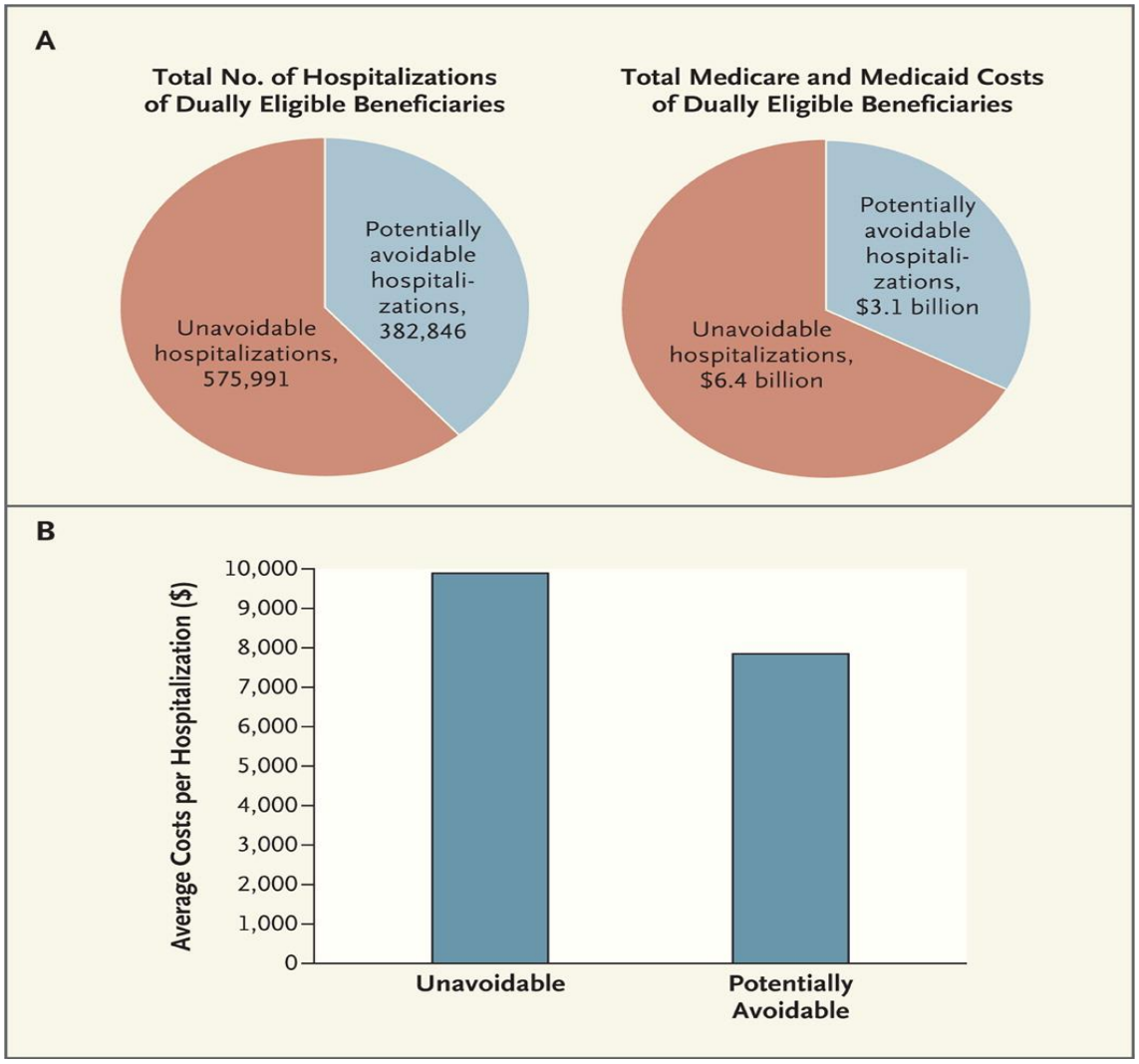
Table 1. Characteristics of the Patients, According to the Number of Burdensome Transitions.*

Characteristic	All Residents (N=474,829)	Residents According to Number of Burdensome Transitions			
		0 (N=384,601)	1 (N=75,368)	2 (N=13,509)	3 (N=1351)
Age — yr	85.7±7.6	86.0±7.6	84.5±7.7	83.7±7.7	83.3±7.6
Female sex — no. (%)	370,202 (78.0)	305,286 (79.4)	54,804 (72.7)	9,239 (68.4)	873 (64.6)
Race or ethnic group — no. (%)†					
White	394,304 (83.0)	329,071 (85.6)	55,593 (73.8)	8,774 (64.9)	866 (64.1)
Black	57,022 (12.0)	38,739 (10.1)	14,442 (19.2)	3,498 (25.9)	343 (25.4)
Hispanic	15,726 (3.3)	10,877 (2.8)	3,861 (5.1)	884 (6.5)	104 (7.7)
Asian	5,899 (1.2)	4,428 (1.2)	1,145 (1.5)	295 (2.2)	31 (2.3)
American Indian	1,647 (0.3)	1,299 (0.3)	293 (0.4)	51 (0.4)	4 (0.3)
Missing data	231 (<0.1)	187 (<0.1)	34 (<0.1)	7 (<0.1)	3 (0.2)
Education — no. (%)					
Less than high school	180,048 (37.9)	140,898 (36.6)	32,072 (42.6)	6,403 (47.4)	675 (50.0)
High-school graduate	148,148 (31.2)	120,762 (31.4)	23,031 (30.6)	3,972 (29.4)	383 (28.3)
Some college or technical school	49,103 (10.3)	40,792 (10.6)	7,103 (9.4)	1,094 (8.1)	114 (8.4)
College degree or higher	32,910 (6.9)	27,753 (7.2)	4,486 (6.0)	614 (4.5)	57 (4.2)
Missing data	64,620 (13.6)	54,396 (14.1)	8,676 (11.5)	1,426 (10.6)	122 (9.0)
Congestive heart failure	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Hip fracture	19,101 (4.0)	15,675 (4.1)	2,894 (3.8)	482 (3.6)	50 (3.7)
Stroke	138,989 (29.3)	107,449 (27.9)	25,703 (34.1)	5,290 (39.2)	547 (40.5)
Chronic obstructive pulmonary disease	40,209 (8.5)	30,512 (7.9)	7,781 (10.3)	1,728 (12.8)	188 (13.9)
Cancer	17,884 (3.8)	14,777 (3.8)	2,585 (3.4)	473 (3.5)	49 (3.6)
Pneumonia	22,075 (4.6)	15,072 (3.9)	5,360 (7.1)	1,476 (10.9)	167 (12.4)
Missing data	867 (0.2)	746 (0.2)	102 (0.1)	19 (0.1)	0
Dementia — no. (%)					
Alzheimer's disease	99,164 (20.9)	83,173 (21.6)	13,665 (18.1)	2,109 (15.6)	217 (16.1)
Other than Alzheimer's disease	144,984 (30.5)	118,561 (30.8)	22,108 (29.3)	3,960 (29.3)	355 (26.3)
Cognitive performance score of 6: very severe impairment — no. (%)	389,628 (82.1)	313,771 (81.6)	62,903 (83.5)	11,722 (86.8)	1,182 (87.5)
ADL score of 28 — no. (%)§	302,006 (63.6)	242,736 (63.1)	48,851 (64.8)	9,475 (70.1)	944 (69.9)

* Plus–minus values are means ±SD. P<0.001 for the overall comparison among groups in each category, with the exception of unstable cognition or status with respect to activities of daily living (ADL) status (P=0.07).
† Race or ethnic group was provided in the database records.
‡ Unstable cognition and unstable ADL status are indicators on Medicare's Minimum Data Set (MDS) suggesting that the condition of a nursing home resident is deteriorating.
§ A score of 28 indicates that the MDS assessment completed closest to 120 days before death documented that a nursing home resident was totally dependent in all seven items on the ADL scale.

Il 19% degli ospiti ha subito un ricovero oneroso negli ultimi 90 giorni di vita.
In particolare, 11.6% negli ultimi 3 gg di vita,
2.7% non è stato riaccolto nella medesima NH e
8.1% ha subito ripetute ospedalizzazioni negli ultimi 90 gg di vita

Unavoidable and Potentially Avoidable Hospitalizations of Nursing Home Residents Eligible for Both Medicare and Medicaid, 2005.



Ouslander JG, Berenson RA. N Engl J Med 2011;365:1165-1167.

Potentially Avoidable Hospitalizations of Nursing Home Residents: Frequency, Causes, and Costs

Joseph G. Ouslander, MD,[*†] *Gerri Lamb, PhD, RN, FAAN,*[‡] *Mary Perloe, MS, GNP,*[§] *JoVonn H. Givens, MPH,*[§] *Linda Kluge, RD, LD, CPHQ,*[§] *Tracy Rutland, MBA, MHA,*[§] *Adam Atherly, PhD,*[‖] *and Debra Saliba, MD, MPH*[#**]

Table 3. Causes of Potentially Avoidable Hospitalizations

Hospital Admitting Diagnoses for Hospitalizations Rated as Potentially Avoidable*	n (%) (N = 103)
ardiovascular (mainly congestive heart failure and chest pain)	22 (21)
Respiratory (mainly pneumonia and bronchitis)	21 (20)
Mental status change or neurological symptom or sign	13 (12)
Urinary tract infection	11 (11)
Sepsis or fever	8 (8)
Skin (cellulitis, infected wound, or pressure ulcer)	8 (8)
Dehydration or metabolic disturbance	7 (7)
Gastrointestinal (bleeding, diarrhea)	7 (7)
Musculoskeletal pain or fall	3 (3)
Psychiatric	1 (1)
Other (adverse drug effect, surgical consult)	2 (2)

Fattori associati alla ospedalizzazione potenzialmente evitabile

Table 4. Expert Panel Ratings of Factors Associated with Potentially Avoidable Hospitalizations*

Factors Rated by Panel	Nursing Homes with High Hospitalization Rates (n = 10 Homes; 76 Potentially Avoidable Hospitalizations)		Nursing Homes with Low Hospitalization Rates (n = 10 Homes; 58 Potentially Avoidable Hospitalizations)		All Nursing Homes (N = 20 Homes; 134 Potentially Avoidable Hospitalizations)	
	Important	Somewhat Important	Important	Somewhat Important	Important	Somewhat Important
	n (%)					
The same benefits could have been achieved at a lower level of care.	50 (66)	20 (26)	35 (60)	19 (33)	85 (63)	39 (29)
The nursing home should have been able to do everything done by the hospital.	36 (47)	27 (36)	31 (54)	18 (31)	67 (50)	45 (34)
Better quality of care provided in the nursing home by the physician, nurse practitioner, or physician assistant may have prevented the transfer.	42 (55)	19 (25)	31 (54)	19 (33)	73 (55)	38 (28)
One physician visit could have avoided the transfer.	26 (34)	34 (45)	24 (41)	23 (40)	50 (37)	57 (43)
Better quality of care by nursing home staff may have prevented the transfer.	20 (26)	31 (41)	12 (21)	33 (57)	32 (24)	64 (48)
Better quality of care would have prevented or decreased severity of acute change.	28 (37)	25 (33)	16 (28)	23 (40)	44 (33)	48 (36)
Better advance care planning would have prevented the transfer.	31 (41)	15 (20)	20 (35)	17 (29)	51 (38)	32 (24)
Resident's overall condition limited his or her ability to benefit from the transfer.	15 (20)	21 (28)	10 (17)	17 (29)	25 (19)	38 (28)
Resident or family did not want hospitalization.	4 (5)	12 (16)	4 (7)	5 (9)	8 (6)	17 (13)
Family or proxy insisted on transfer.	5 (7)	6 (8)	5 (9)	5 (9)	10 (8)	11 (8)

JAGS 58:627–635, 2010

Falling Through the Cracks: Challenges and Opportunities for Improving Transitional Care for Persons with Continuous Complex Care Needs

Table 1. Components of Effective Care Transitions

Before any decision to transfer, the potential for harm from imposing an additional transfer to a new setting needs to be weighed against the potential for benefit. The appropriateness of the match between the proposed care setting and the patient's medical, nursing, and functional needs should determine the decision to transfer.

Migliorare l'evento trasferimento presso un'altra sede di cura richiede
- una corretta comunicazione e scambio di informazioni tra chi invia e chi riceve (CRA/Osp e viceversa) con il piano di cura,
- lista dei problemi, cure già prestate, ecc;
- preparare pz e familiari su ciò che ci si può aspettare;
- riconciliazione della terapia, ecc

- Preparation of the patient and caregiver for what to expect at the next site of care
- Reconciliation of the patient's medication prescribed before the initial transfer with the current regimen
- A follow-up plan for how outstanding tests and follow-up appointments will be completed
- An explicit discussion with the patient and caregiver regarding warning symptoms or signs to monitor that may indicate that the condition has worsened and the name and phone number of who to contact if this occurs

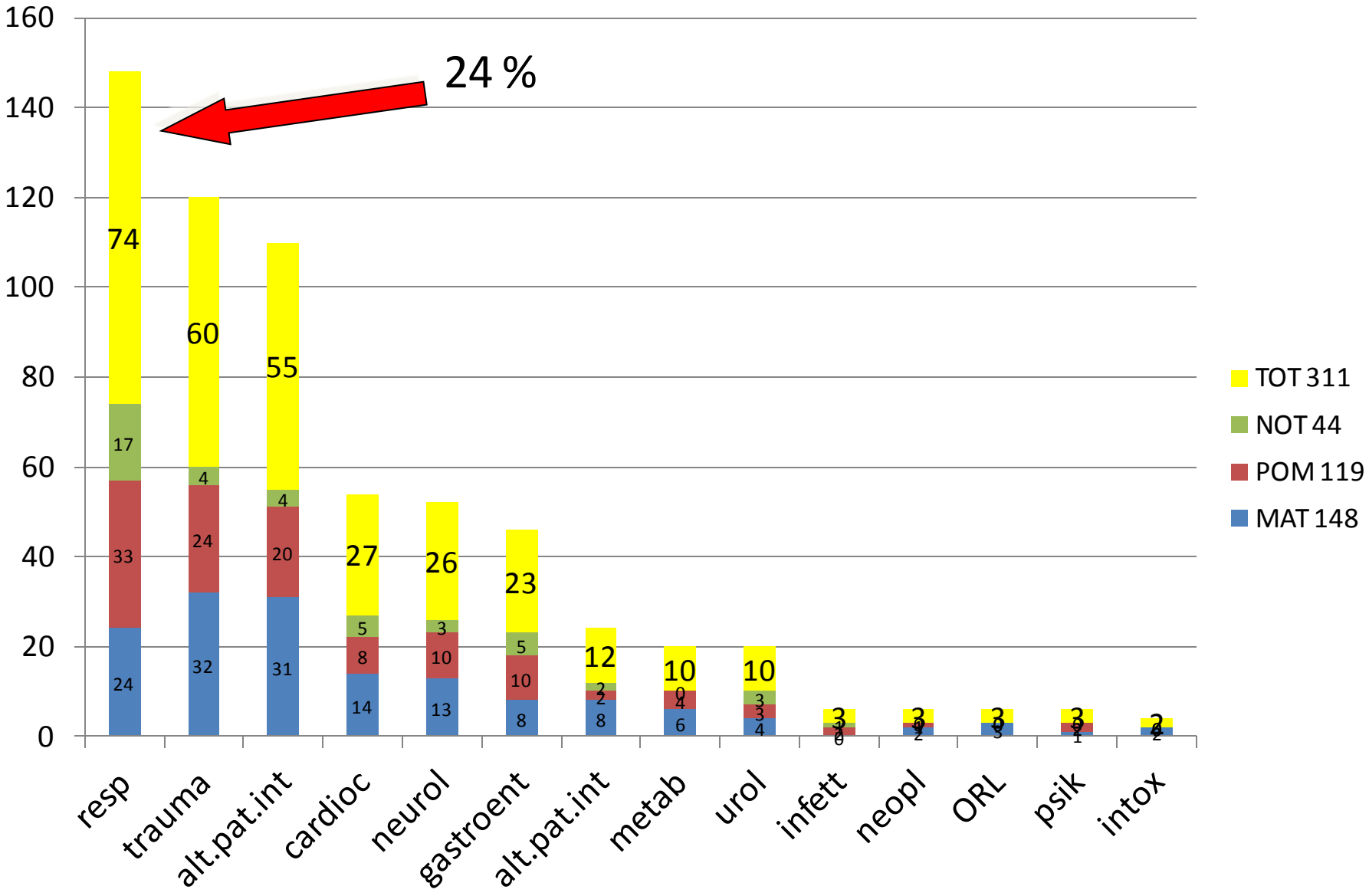
Coleman EA. JAGS 51:549–555, 2003

su un totale di 829 posti letto nel distretto di parma

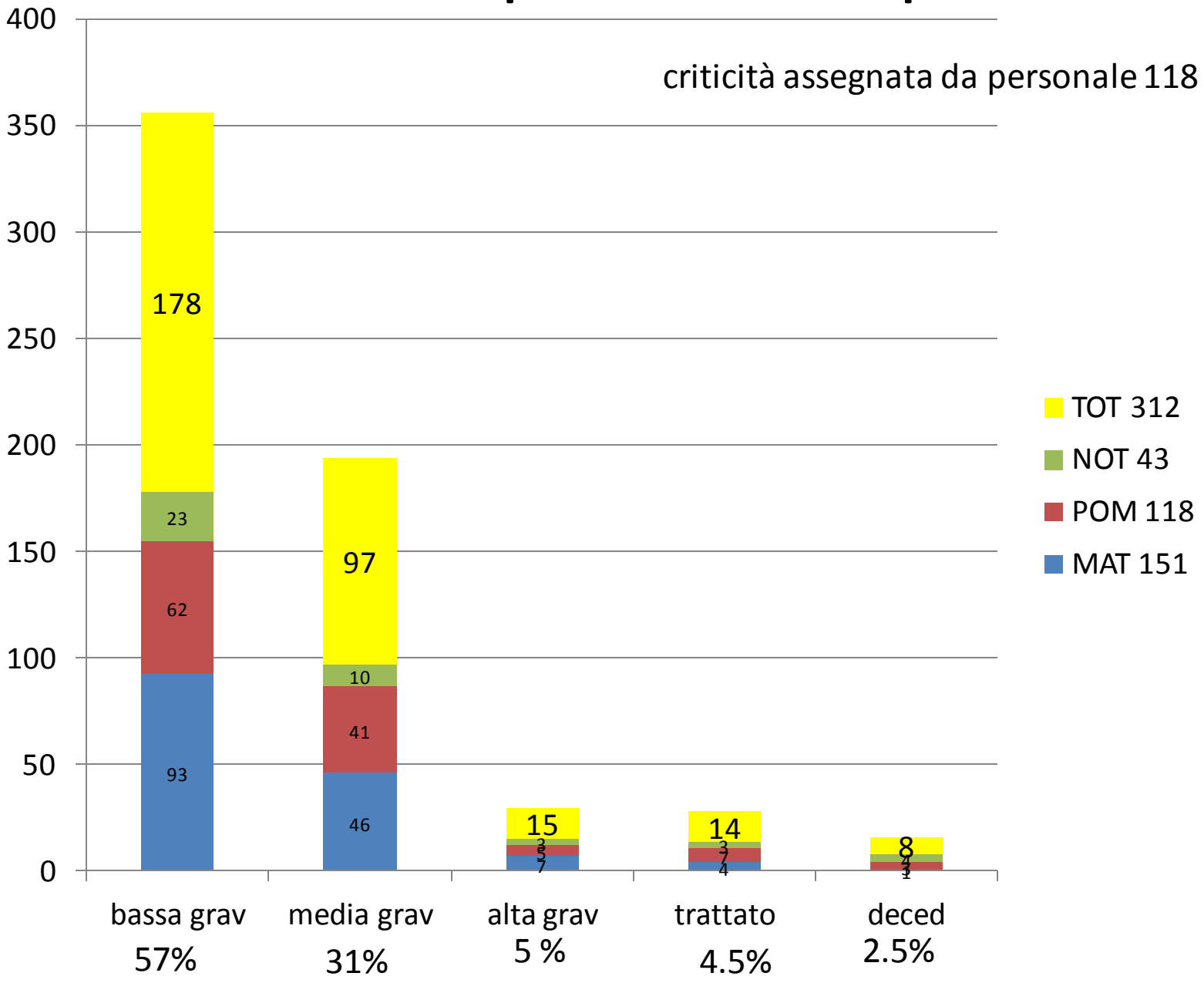
313 ric/365 gg

< 1 ricovero al giorno nel 2011

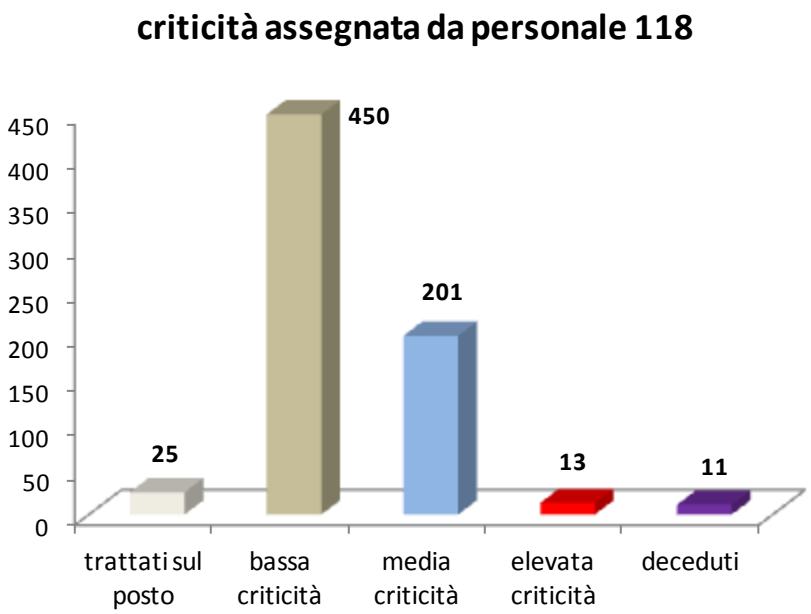
ricoveri per patologia nelle fasce orarie



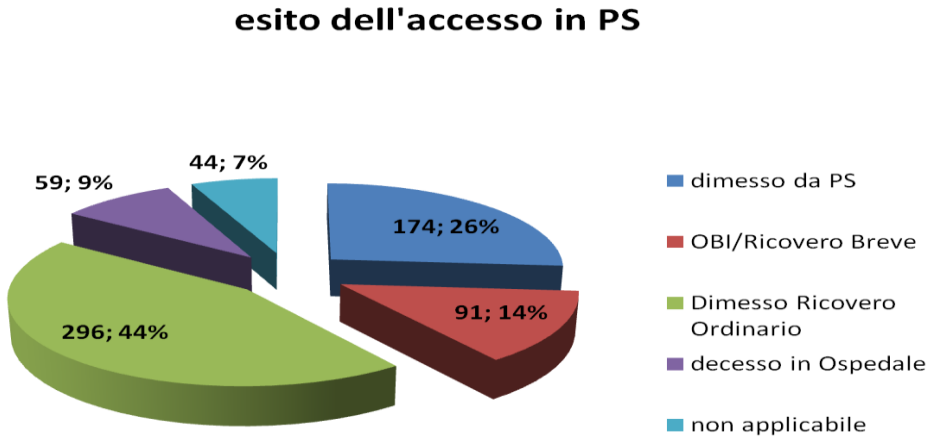
Distribuzione per criticità presunta



Distribuzione per criticità presunta

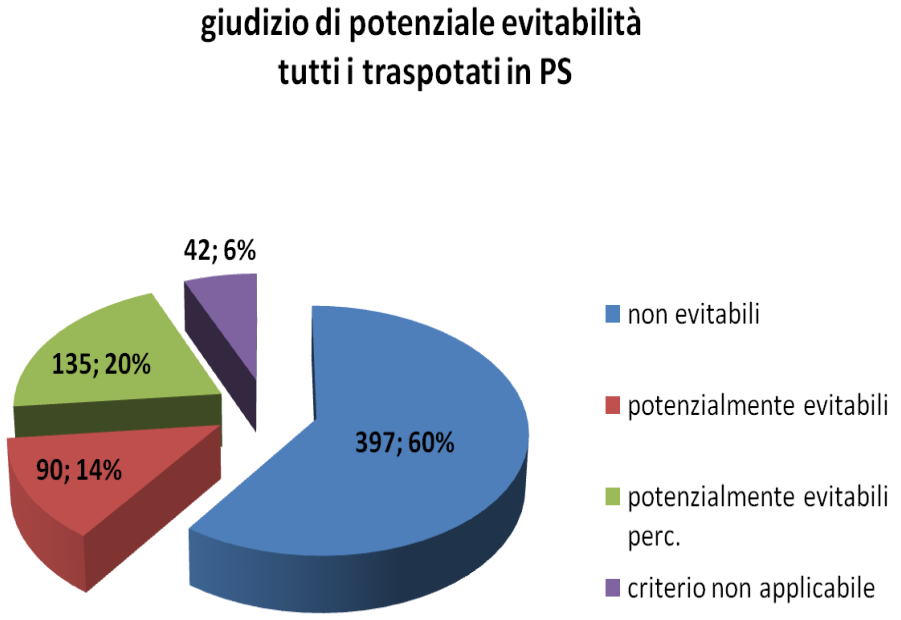


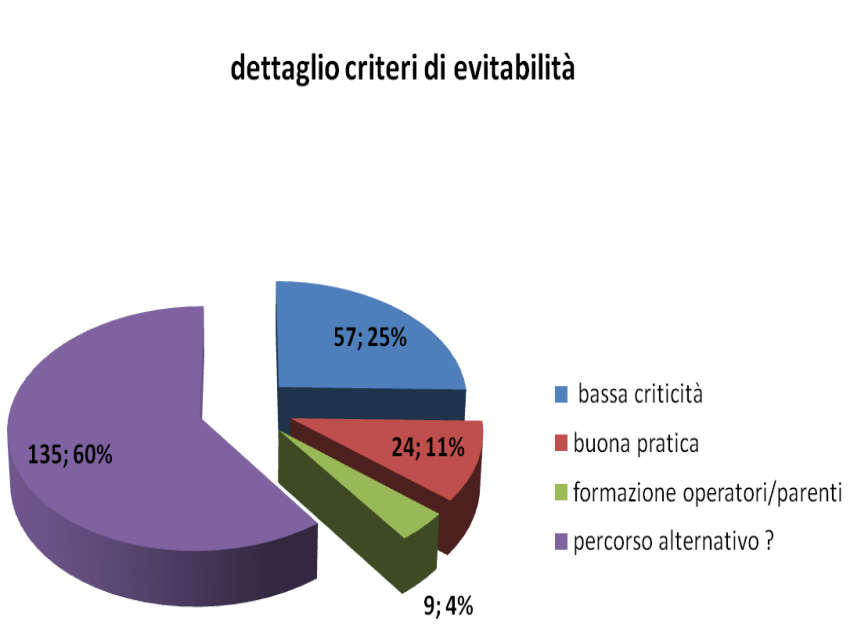
trattati sul posto	25	*3,6%*
bassa criticità	450	*64,3%*
media criticità	201	*28,7%*
elevata criticità	13	*1,9%*
deceduti	11	*1,6%*
	700	



D'Anastasio C., Bologna 2013

Accessi potenzialmente evitabili al PS da Case Residenza per Anziani - AUSL Bologna





D'Anastasio C., Bologna 2013