Gruppo di ricerca geriatrica

Journal Club, 21 Dicembre 2007

Le cure sub-intensive
(Meminisse juvabit[1])

Renzo ROZZINI

[1]Virgilio, Eneide

Outilines

- Il contesto
- La storia
  - La nostra storia
  - La storia delle SICU a livello internazionale
- Le aree di interesse
- La SICU a Brescia
  - Guidelines
  - Caratteristiche dei pazienti
  - Efficacia e ricadute sull'U.O.
- Ricerca e spunti di ricerca
  - Delirium
  - Stroke
  - Respiratory
  - Iperglicemia
  - Disidratazione
- Punti forti e criticità
- Dove andiamo, dove andare
- Conclusioni

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Trends in hospital admissions

- More severe patients
- More elderly patients
- More technically advanced interventions
- Shorter lenght of stay

Acute Care for the Elderly

Landefeld CS –95, Asplund K, -00, Saltvedt I, -02: improves function, length of stay, institutional care and mortality

- **Central location in the hospital**
- **Geriatricians responsible and a wide range of organ specialists available**
- **Friendly localities, adequate lightening**
- **Living room for meals and activities**
- **Selected patients (high age and frailty)**
- **Rapid and wide diagnostic work up**
- **Interdisciplinary assessment**
- **Interdisciplinary care plan**
- **Discharge planning**
- **Standards for medical care, nursing care and documentation**

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Congregazione
Suore Ancelle della Carità

FONDAZIONE
ADELE E CAV. FRANCESCO
LONATI

Gruppo di ricerca geriatrica

» Brescia, mercoledì 23 aprile 2003

Aula Magna H. Poliambulanza
Via Bissolati, 57

CORSO D'AGGIORNAMENTO

» Il paziente anziano critico con patologia respiratoria

Presiede:
Vittorio Grassi
Università degli Studi di Brescia

ore 18,30
"Il punto di vista dell'intensivista"
Achille Bernardini
H. Poliambulanza

ore 19,00
"Il punto di vista del geriatra nell'unità di cura sub-intensiva"
Renzo Rozzini
H. Poliambulanza

ore 19,30
"Il punto di vista del riabilitatore nella continuità della cura"
Giovanni Aliprandi
Domus Salutis

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History of medical intermediate care areas

1. Elisberg, E.I., A medical intermediate nursing care area (MINCA). Chest. 1971; 60(2)
2. Fairman, J., and Kagan, S., Creating Critical Care: The Case of the Hospital of the University of Pennsylvania, 1950-1965. Advances in Nursing Science. 1999; 22(1): pag. 63
3. Fairman, J., Watchful Vigilance: Nursing Care, Technology and the Development of Intensive Care Units. Nursing Research. 1992; 41(1): 56-60
4. Iualiano, A., B., Developing a medical intermediate care area. Supervisor Nurse. 1980; 11(4): 61-63
5. Jeffers, W., Acute bed only? That's bad!, Medical Economics. 45:191. 1968
6. Listi, S. A., Constant Care Unit, Hospitals. 44(41, 1970
7. Wimberly, P., Neurosurgical Intermediate Care Unit. Journal of Neuro-surgical Nursing. 1969; October 1: pgs. 101-104
8. "Surgical Progressive Care Unit", Hospitals, 1971; 45(2): 28-30

University of Missouri HEALTH CARE

University Hospital Opens Intermediate Care Unit

The fourth-floor adult step-down unit is staffed at a 3:1 patient-to-nurse ratio. It is designed to provide care to acutely ill adults under the direct supervision of a registered nurse. Patients needing intermediate-level care may not be ill enough to be placed in an intensive care unit, but they need more specialized attention than patients on general care units.

"Many patients require an intermediary level of care, meaning the patients do not need life- sustaining treatments like ventilators but they still need regular nursing assessment, ongoing monitoring and frequent intervention." "This new unit gives us a specialized facility equipped to best serve patients needing this intermediate level of health care."

"One of the things we've done is put windows with shades in all the doors," said Ragan. "This way a nurse can provide a quiet atmosphere but step out into the hall and still physically see the patient."

Other features include mobile equipment carts, movable computers for electronic charting and rooms with individualized resources such as cardiac monitoring devices. To remain experts in the levels of knowledge needed to care for this acutely ill patient population, staff members will participate in ongoing education courses on topics such as advanced cardiac life support, conscious sedation, adult basic critical care and trauma nursing.

CENTRAL DUPAGE HOSPITAL

Intermediate Care Unit

Comprehensive Care to Promote Healing

The Intermediate Care Unit (IMCU) at Central DuPage Hospital provides nursing care for patients who are too ill for the general inpatient unit, yet do not need the extremely intensive level of care of the ICU. Care of patients in the IMCU typically calls for frequent and intense observation as the patient's clinical condition changes.
Our IMCU is a 27-bed unit where patients with acute pulmonary, medical, surgical and cardiac conditions receive treatment and excellent care.

Our Services

Patient care services vary widely, depending on each individual's specific needs. Common services provided in the Intermediate Care Unit include:
-Airway management
-Tracheotomies, to provide more oxygen to the lungs
-Ventilator support, for patients unable to breathe on their own
-Insertion and maintenance of central IV lines
-Insertion and maintenance of chest tubes
-Pulse oximetry, to measure oxygen in the blood
-Stable and titratable medicated infusions
-Cardiac telemetry , to monitor heart function

Our Staff

Patients benefit from the commitment of physicians, nurses and others dedicated to outstanding care for patients with complex medical and surgical needs. The Intermediate Care Unit at Central DuPage Hospital is staffed by:
-Registered nurses, including the patient care manager and charge nurse
-Patient care technicians (PCTs)
-Administrative staff
-Staff educator
In addition, professionals from varied disciplines add support whenever needed. Patients may receive support from specialists in care coordination, nutrition, pharmacy, social work, spiritual care, rehabilitation services, IV therapy and pain management.

Intermediate Care Unit-Majo Clinic

Our 19-bed Intermediate Care Unit provides care for patients who require less care than available in CCU but more than the medical-surgical rooms. Patients who benefit from intermediate care include those who have had a stroke, have pneumonia, people who underwent cardiac procedures and other surgeries. Open heart surgery patients are often able to move to the Intermediate Care following a day in Critical Care.
Eleven of the units include a telemetry system which allows nurses to monitor patients' heart rhythms continuously and respond more quickly when necessary. The state-of-the-art system sounds an alarm on the nurse's pager and a small screen allows the nurse to see the heart rhythm.

Proposed new language for the Intermediate Care Units (new language):

7.3 Intermediate Care Units

Intermediate care units, sometimes referred to as stepdown units, are routinely utilized in acute care hospitals for patients who require frequent monitoring of vital signs and/or nursing intervention that exceeds the level needed in a regular medical/surgical unit but is less than that provided in a critical care unit. Intermediate care units can be progressive care units or specialty units such as cardiac, surgical (i.e., thoracic, vascular, etc.), neurosurgical/neurological monitoring, or chronic ventilator respiratory care units. These standards shall apply to adult beds designated to provide intermediate care, but not pediatric or neonatal intermediate care.

In hospitals that provide intermediate care, beds shall be designated for this purpose. These beds may constitute a separate unit or be a designated part of another unit.

There shall be a separate physical area devoted to nursing management for the care of the intermediate patient.

ASHE: Dedicated to optimizing the healthcare physical environment

1. Intensivtherapie
2. *Intermediate Care*
3. Normal/Minimalpflege

ORIGINAL ARTICLE

The Effect of an Intermediate Care Unit on the Demographics and Outcomes of a Surgical Intensive Care Unit Population

Soumitra R. Eachempati, MD; Lynn J. Hydo, RN, MBA; Philip S. Barie, MD, MBA

Hypothesis: Many surgical intensive care units (SICUs) face bed shortages for acutely ill patients that may result from a large proportion of bed occupation by chronically ill patients. We hypothesized that the introduction of a new intermediate care or step-down unit (SDU) managed by surgically trained intensivists would allow the admission of more acutely ill patients while maintaining satisfactory outcomes.

Design: Prospective retrospective comparison of SICU patient populations before and after the introduction of an SDU.

Setting: The SICU of NewYork-Presbyterian Hospital, New York Weill Cornell Center, a university hospital containing a level I trauma center.

Patients and Interventions: All patients in the SICU admitted from August 1, 1996, through June 30, 1997, were SICU patients prior to the introduction of the SDU. Patients admitted from August 1, 1997, through June 30, 1998, were SICU post-SDU patients, and SDU patients included those admitted to the SDU from August 1, 1997, through July 1, 1998.

Main Outcome Measures: For each of the 2 eras, patients were compared for age, sources of admission, Acute Physiology and Chronic Health Evaluation (APACHE) II and III scores, unit length of stay, and mortality. Other data collected included origin of admission, nature of admission, and diagnosis.

Results: Six hundred sixty-six patients were admitted during the pre-SDU era, while a total of 1117 patients (619 SICU and 498 SDU patients) were admitted in the post-SDU era. After the introduction of the SDU, the mean (standard deviation) APACHE II scores of the SICU and SDU patients increased (14.2 vs 13.4, $P=.04$) without affecting mortality (6.0% in the post-SDU era vs 8.2% in the pre-SDU era, $P=.07$). The post-SDU era had a higher proportion of emergency admissions (42.3% vs 48.6%, $P<.05$) and interhospital transfers (7% vs 1%).

Conclusions: Opening an SDU resulted in a significant increase in the overall severity of the SICU population. Creation of an SDU managed by surgically trained intensivists may optimize the use of a hospital's resources, permit the expansion of emergency or tertiary care services, and improve outcomes for critically ill surgical patients.

Arch Surg. 2004;139:315-319

clinical investigations in critical care

Closure of an Intermediate Care Unit*

Impact on Critical Care Utilization

Robert J. Byrick, M.D.; C. David Mazer, M.D.; and Gary M. Caskennette

We studied the effect of closing a six-bed intermediate care area (ICA) on utilization of a multidisciplinary critical care unit (CCU). Data were collected on all admissions to the 7-bed CCU for 9 months prior to ICA closure (n=217) and compared with 9 months after CCU expansion (7 to 9 beds) and ICA closure (n=407). Nonemergency CCU admissions increased from 41 to 112 after ICA closure ($p<0.03$). Mean APACHE II score within 24 h of admission decreased from 21.9±7.4 to 18.6±7.4 ($p<0.0001$). The proportion of patients with APACHE II score <15, increased from 30/217 to 136/407 accounting for an increase from 5.4 percent to 12.7 percent of CCU days ($p<0.0001$). Nursing workload at the time of discharge from CCU decreased ($p<0.0001$). The ICA closure altered CCU admission and discharge decision-making. "Low-risk" admissions increased and patients remained in the CCU until they required less nursing care. One factor determining utilization of a CCU is the facilities available outside the unit. A CCU management system is especially important when a wide range of illness severity is present. *(Chest 1993; 104:876-81)*

ICA = intermediate care area; TISS = Therapeutic Intervention Scoring System

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The critically ill elderly: Clinical problems of particular interest

- Acute coronary syndrome
- Stroke
- Respiratory failure
- Delirium

Intermediate cardiac care unit patients

Decision to admit a patient to the intermediate ward is at the discretion of the treating physician, and according to the local policy at the particular institution.[16] It is recommended to consider the following conditions:

(i) intermediate risk unstable coronary syndrome patients;
(ii) patients in first stages of recovery from myocardial infarction;
(iii) patients with uncontrollable cardiac insufficiency not responsive to regular oral therapy, especially those with co-morbidities;
(iv) patients with heart disease in need of medical therapy adjustment, special cardiac investigations (e.g. electro-physiological study, cardiac catheterization, etc.), or some of the patients after special cardiac procedure (e.g. implantation of permanent pacemaker or internal cardiac defibrillators).

EUROPEAN SOCIETY OF CARDIOLOGY®
European Heart Journal (2005) 26, 1676–1682
doi:10.1093/eurheartj/ehi202

New trends in stroke care includes a higher level of care with continous monitoring of vital signs and possibilities for interventions – and a shorter stay

Respiratory failure

Non-invasive mechanical ventilation and RICU

- **Increasing number of elderly patients with COPD**
- **New trends in therapy – NIMV/NPPV**
- **Respiratory Intensive Care Units**

A need for new solutions to meet the demand for intensivists, pulmonologists and facilities for the use of Non-invasive Mechanical Ventilation

Non-invasive positive pressure ventilation for treatment of respiratory failure due to exacerbation of chronic obstructive pulmonary disease

- **Cochrane Database Syst Rev. 2004**
  - **NPPV resulted in decreased mortality, decreased need for intubation, reduction in treatment failure and rapid improvement in pH and respiratory rate, less complications and reduced length of stay**
  - **NPPV should be considered early in the course of respiratory failure and before acidosis ensues, as a means of reducing the likelihood of endotracheal intubation, treatment failure and mortality**

Where to perform noninvasive ventilation?

Elliott MW, Confalonieri M, Nava S. Eur Respir J. 2002

- **Can be effective in non-ICU – a dedicated intermediate care unit with particular expertise in NIMV is recommended**
  - **Staff, adequately trained in the tecnique, available 24 h/d**
  - **Ready access to invasive ventilation (if indicated)**
  - **The less severe patients and patients with indications of improvement from therapy in ER**

Table 1. Levels of care for acute respiratory patients [11].

Level 0	May be treated in a conventional hospital ward
Level 1	Patients with a risk of clinical deterioration or who come from higher levels of care.
Level 2	Patients requiring care for failure of a single organ (respiratory) or for postoperative care, or those from a higher level of care.
Level 3	Patients requiring advanced or basic respiratory support with failure of at least 2 organs.

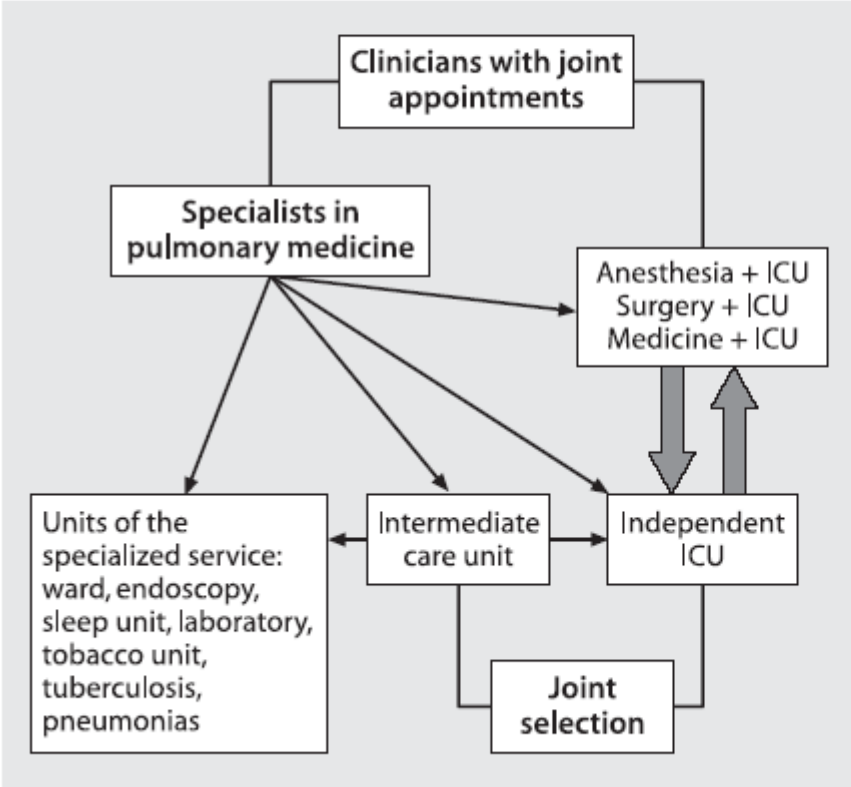

Fig. 1. Model of integration of the Respiratory Medicine specialties in the care of critically ill patients as proposed by the report of the *European Respiratory Society*. Adapted from [11].

Eur Respir J 2002; 20: 1343–1350
DOI: 10.1183/09031936.02.00058202
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European Respiratory Journal
ISSN 0903-1936

ERS TASK FORCE

Respiratory intermediate care units: a European survey

European Respiratory Society Task Force on epidemiology of respiratory intermediate care in Europe

Members of the Task Force: A. Corrado, C. Roussos, N. Ambrosino, M. Confalonieri, A. Cuvelier, M. Elliott, M. Ferrer, M. Gorini, O. Gurkan, J.F. Muir, L. Quareni, D. Robert, D. Rodenstein, A. Rossi, B. Schoenhofer, A.K. Simonds, K. Strom, A. Torres, S. Zakynthinos

This Task Force was approved by the European Respiratory Society Scientific Review Committee, May 14, 1999.

Table 1. – Criteria adopted by the components of Task Force in order to define a respiratory intermediate care unit

Criteria for admission	Type of intervention and equipment	Staffing
Single organ failure (respiratory failure)	Noninvasive mechanical ventilation	A minimum of one nurse to four patients (throughout 24 h)
Acute respiratory failure requiring monitoring (but not necessarily mechanical ventilation)	Availability of life support ventilators Conventional mechanical ventilation by an artificial airway should be provided when necessary and the patient should be transferred to the ICU	Doctor immediately available 24 h·day^{-1} with the same profile as the senior doctor
Tracheostomy ventilated patients coming from ICU (post-acute or weaning)	Minimum monitoring required (Oximetry, ECG, noninvasive blood pressure, respiratory rate) for each bed	Unit under supervision of at least one senior doctor (with training in pneumology and in noninvasive and invasive mechanical ventilation) Availability of respiratory physiotherapist

ICU: intensive care unit; ECG: electrocardiogram.

Table 2. – Definition of the three levels of care

	Respiratory ICU	RICU	RMU
Major Criteria			
Nurse:patient ratio per shift	>1:3	1:3 or 1:4	<1:4
Bed equipment	Polyfunctional monitors[#] Life support ventilators	Polyfunctional monitors[#] Mechanical ventilators (for NIV, with availability of life support ventilators)	Polyfunctional monitors[#] Mechanical ventilators (for NIV)
Treatment	Lung or more than one organ failure	Lung failure (one organ failure)	Lung failure (one organ failure)
Attending physician	24 h	Immediately available 24 h	On call (within the hospital)
Mechanical ventilation	Invasive and noninvasive when needed	Noninvasive and invasive when needed	Noninvasive when needed
Minor criteria			
Bronchoscopy	Inside unit	Inside unit	Inside or outside unit
ABGA	Inside unit	Inside unit	Inside or outside unit

ICU: intensive care unit; RICU: respiratory intermediate care unit; RMU: respiratory monitoring unit; NIV: Noninvasive mechanical ventilation; ABGA: arterial blood gas analyser. [#]: Oximetry, electrocardiogram, noninvasive blood pressure, respiratory rate. All major criteria and at least one of the minor must be satisfied to include a unit in this level.

A new model for managing delirious older inpatients

Flaherty JH et al. JAGS 2003

- **Delirium is a complicating disorder in acute ill elderly, predicting poor survival and functional recovery (Inouye SK et al., J Gen Intern Med, 1998)**
- **Delirium can be successfully prevented and treated (Inouye SK et al., NEJM, 1999)**

”The Delirium Room”

Flaherty JH, St. Louis Medical Center

- **In an Acute Care of the Elderly Unit**
- **4 beds dedicated to the care of delirious patients**
- **Nurse:patients 1:4**
- **No physical restraints**
- **Initial non-pharmacol. approach**
- **Delirium Mnemonic**

Delirium Mnemonic for Causes of Delirium

D Drugs
E Eyes, ears
L Low oxygen state (AMI, stroke)
I Infection
R Retention of urin or stool
I Ictal
U Underhydration, undernutrition
M Metabolic
S Subdural hematoma

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L'Unità di Cura Sub-Intensiva (UCSI) consta di quattro letti con monitorizzazione dei parametri vitali, tre ventilatori per la ventilazione non invasiva, pompe volumetriche e peristaltiche (infusione di farmaci, nutrizione parenterale ed enterale totale):

Obiettivi UCSI: a) monitoraggio 24h/24h
b) intensività infermieristica
c) maggiore supervisione medica

L’intensività infermieristica

Fa riferimento alla più frequente richiesta di determinazione dei parametri clinici, alla toilette polmonare, alla gestione della ventilazione non invasiva, ala necessità più frequente di posizionamento e mobilizzazione nonché alla miriade di compiti infermieristici che vanno molto al di là delle possibilità del numero di infermieri assegnati ad un’unità medica convenzionale ecc.

La supervisione medica

-Fa riferimento alla stretta interazione con lo staff infermieristico che permette la repentina lettura dei parametri rilevati dal monitoraggio, la tempestiva implementazione di nuove terapie o la modifica dei dosaggi di quelle in atto.

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Criteri di ammissione e linee guida per la dimissione che possono qualificare un'Unità di Cura Sub-Intensiva-UCSI secondo la Society of Critical Care Medicine

(Crit Care Med, 1998; 26:607-610)

(Versione adattata per la UCSI della Poliambulanza)

Guidelines on Admission and Discharge for Adult Intermediate Care Units

American College of Critical Care Medicine
of the Society of Critical Care Medicine

INTRODUCTION

In acute care hospitals, one can identify a patient population that does not require intensive care but needs more care than that provided on a general ward. These patients may require frequent monitoring of vital signs and/or nursing interventions, but usually do not require invasive monitoring. In a study of 706 surgical and medical ICU patients, this patient population accounted for approximately 22% of all ICU bed days (1). In a more recent study of 17,440 ICU admissions, 6,180 patients were admitted strictly for intensive monitoring, though they had a less than 10% risk for requiring active treatment based on this monitoring (2). As a consequence, intermediate care has been proposed as a more appropriate means of resource utilization for these patients (2-6). Intermediate care areas can be represented as multipurpose "progressive care units" or as single-organ subspecialty floors such as cardiac telemetry, surgical (thoracic, vascular, etc.), neurosurgical/neurological monitoring areas, or chronic ventilator respiratory care units (7-11). In light of the recent emphasis on cost containment, the intermediate care unit concept is suggested as a strategy that promotes greater flexibility in patient triage, increases accessibility to limited intensive care and provides a cost-effective alternative to critical care unit admission, particularly for patients with a low risk of, but potential for, major complications and who have been admitted for routine monitoring (7, 11-16). Moreover, patient satisfaction may be increased since an intermediate care environment is less noisy and may have more liberal family visitation policies (17).

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These guidelines can also be found in the March 1998 issue of *Critical Care Medicine* -- *Crit Care Med* 1998 Mar; 26(3):607-610

Admission and discharge guidelines for the Sub-intensive Care Unit for the elderly

I. Admission Criteria

A. Cardiac system

1. Low probability for ST-elevation myocardial infarction.
2. Hemodynamically stable myocardial infarction.
3. Any hemodynamically stable dysrythmia.
4. Congestive heart failure without shock (NYHA classes III-IV).
5. Hypertensive urgency without evidence of end-organ damage.

B. Pulmonary system

1. Hemodynamically stable patients with respiratory failure requiring NIV.
2. Patients who require frequent monitoring of vital signs.

C. Neurologic disorders

1. Patients with stroke who require frequent neurologic assessments or frequent suctioning or turning.
2. Patients with chronic, but stable neurologic disorders, who require frequent nursing interventions.

D. Drug ingestion and drug overdose

1. Any patient requiring frequent neurologic, pulmonary, or cardiac monitoring for drug ingestion or overdose who is hemodynamically stable.

E. Gastrointestinal (GI) Disorders

1. GI bleeding with minimal orthostatic hypotension responsive to fluid therapy.

2. Variceal bleeding without evidence of bright red blood by gastric aspirate and stable vital signs.

3. Acute liver failure with stable vital signs.

F. Endocrine

1. Diabetic ketoacidosis patients requiring constant intravenous infusion of insulin, or frequent injections of regular insulin during early regulation phase after recovery form diabetes ketoacidosis.

2. Hyperosmolar state with resolution of coma.

3. Thyrotoxicosis, hypothyroid state requiring frequent monitoring.

G. Miscellaneous

1. Appropriately treated and resolving early sepsis without evidence of shock or secondary organ failure.

2. Patients requiring closely titrated fluid management.

3. Any patient requiring frequent nursing observation or monitoring of vital signs who does not fall under the above categories may be considered for admission (i.e.: Addison's disease, renal failure, delirium, hypercalcemia or other electrolyte disturbances).

II. Patient who are usually not appropriate for admission

A. Complicated acute myocardial infarction with temporary pacemaker, angina, hemodynamic instability, significant pulmonary edema or significant ventricular dysrythmias.
B. Patients requiring heavy nursing loads and titrated patient care 12-24 hrs/day.
C. Patients with acute respiratory failure who are intubated or at imminent risk of requiring intubation.
D. Patients requiring invasive hemodynamic monitoring with a pulmonary artery or left atrial catheter or an intracranial pressure monitor.
E. Patients in status epilepticus.
F. Patients with catastrophic brain illness or injury who are not to be resuscitated and are not candidates for organ donation.
G. Patients from whom aggressive modalities of care are being withheld or have been withdrawn, such that they are receiving only for comfort measures.

III. Discharge of patients from the SICU shall take place:

A.When a patient's physiological status has stabilized and the need for intensive patient monitoring is no longer necessary and the patient can be cared for on a general unit.
B. When a patient's physiological status has deteriorated and active life support is required or highly likely, the patient should be transferred to the Intensive Care Unit per unit-specific protocol.
C. Patients from whom, during their stay in the SICU, aggressive modalities of care are being withheld or have been withdrawn, such that they are receiving only for comfort measures.

Process of care for patients admitted to the SICU

In Emergency Room or other referring department:

- **Social anamnesis (civil status, living conditions, formal and informal care etc.)**
- **Physiologic anamnesis (previous diseases, surgical&medical treatment)**
- **Actual problem-orientated anamnesis**
- **Physical examination (check list)**
- **Assessment of severity (APACHE II score)**

In SICU/ACE-unit:

- **Comprehensive geriatric assessement at admission**
  - **-IADL and Barthel Index two weeks prior to admission and at admission**
  - **-screening for delirium with CAM**
  - **-nurse assessment (communication, ADL, elimination, mood and sleep)**
- **Review of medical care (main diagnoses, comorbidity, adverse events, medication, examinations and procedures)**
- **Patient-centered care plans (prevention of pressure sores, delirium and falls)**
- **Define expected clinical goals**
- **Discharge planning**
- **Visit of patients (twice daily): Review of medical care, patient-centered care plans, clinical goals and plan for discharge**
- **Assessment at discharge: MMSE, Geriatric Depression Scale, IADL and BI.**

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Caratteristiche dei pazienti ricoverati in UCSI (Unità di Cura Sub-Intensiva) e confronto con i pazienti ricoverati in un'U.O. di Geriatria ospedaliera

Ranhoff AH et., Intern Emerg Med. 2006;1:197-203.

Pazienti 60+ ricoverati in Geriatria (ACE-MU) nel 2002 (n=1380) (A), pazienti ricoverati in Geriatria (ACE-MU) con APACHE II score >/=5 e/o APACHE - APS =/>3 nel 2002 (n=125)(B), pazienti ricoverati in UCSI con APACHE II score >/=5 e/o APACHE -APS =/>3 (n=401)(C).

	A ACE–MU n=1380	B ACE-MU (sev) n=125	C UCSI n=401	ACE sev vs UCSI
	M (SD)	M (SD)	M (SD)	*p**
Età	78.8 ±9.3	82.3 ±6.8	78.1 ±8.8	*p<.05*
Sesso(femminile), n (%)	911 (66.0)	49 (56)	196 (49)	*NS*
Vive solo, n (%)	52 (37.7)	37 (29.6)	102 (25.4)	*NS*
Deficit vista, n (%)	293 (21.2)	33 (26.4)	116 (29.0)	*NS*
Alcolismo, n (%)	83 (6.0)	6 (4.8)	20 (5.0)	*NS*
IADL perse (2 wks pre)	3.3 ±2.7	4.5 ±2.9	3.4 ±3.0	*NS*
Barthel Index (2 wks pre)	84.9 ±24.6	65.6 +33.9	72.8 +33.0	*NS*
Barthel Index (ricovero)	75.0 ±28.2	36.6 ±35.9	28.8 ±35.2	*NS*
Barthel Index (dimissione)	78.8 ±26.2	47.5 ±38.2	49.3 ±39.4	*NS*

Pazienti 60+ ricoverati in Geriatria (ACE-MU) nel 2002 (n=1380) (A), pazienti ricoverati in Geriatria (ACE-MU) con APACHE II score >/=5 e/o APACHE - APS =/>3 nel 2002 (n=125)(B), pazienti ricoverati in UCSI con APACHE II score >/=5 e/o APACHE -APS =/>3 (n=401)(C).

	A ACE–MU n=1380 M (SD)	B ACE-MU (sev) n=125 M (SD)	C UCSI n=401 M (SD)	ACE sev vs UCSI *p**
Diagnosi principali, n (%)				
Insufficienza respiratoria	**255 (18.5)**	**35 (28.0)**	**172 (42.9)**	***p<.001***
Patologia cardiaca	**264 (19.1)**	**28 (22.4)**	**111 (27.7)**	***NS***
Stroke	**171 (12.4)**	**15 (12.0)**	**44 (11.0)**	***NS***
Sanguinamento digestivo	**197 (14.3)**	**12 (9.6)**	**27 (6.7)**	***NS***
Problemi cancro correlati	**127 (9.2)**	**18 (14.4)**	**23 (5.7)**	***p<.01***
IRA	**36 (2.6)**	**7 (5.6)**	**16 (4.0)**	***NS***
altro	**527 (38.2)**	**6 (4.8)**	**8 (1.9)**	***NS***

Pazienti 60+ ricoverati in Geriatria (ACE-MU) nel 2002 (n=1380) (A), pazienti ricoverati in Geriatria (ACE-MU) con APACHE II score >/=5 e/o APACHE -APS =/>3 nel 2002 (n=125)(B), pazienti ricoverati in UCSI con APACHE II score >/=5 e/o APACHE -APS =/>3 (n=401)(C).

	A ACE–MU n=1380 M (SD)	B ACE-MU (sev) n=125 M (SD)	C UCSI n=401 M (SD)	ACE sev vs UCSI *p**
MMSE score (0-30)	22.6±7.2	17.0±10.7	19.1±11.0	*ns*
Charlson Index (0-33)	6.9±2.5	8.9±2.9	6.5±2.0	*p<.05*
APACHE II score (0-71)	6.7±2.8	17.9±5.7	14.5±6.0	*p<.05*
APACHE -APS (0-33)	2.1±2.6	8.8±3.6	9.0±5.7	*ns*
Albumina (g/dl)	4.0+0.6	3.5±0.6	3.3±0.6	*ns*
Colesterolo (mg/dl)	205.2±51.4	175.8±49.8	174.2±49.7	*ns*
Farmaci (n)	4.2±3.2	5.0±2.2	7.6±3.2	*p<.05*
Delirium, n (%)	95 (6.9)	27 (21.6)	128 (31.2)	*p<.01*
Catetere vescicale, n (%)	170 (12.3)	45 (36.0)	228 (56.9)	*p<.01*
NIMV n (%)	---		87 (21.7)	
LOS in SICU (ore)	---		61.8±62.4	
LOS (giorni)	6.1±3.2	7.7 ±5.2	6.0±4.9	*NS*
Mortalità SICU, n (%)	---		31 (7.7)	
Mortalità (Hosp), n (%)	50 (3.6)	24 (19.2)	50 (12.5)	*p<.05*

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Modificazioni della durata della degenza, età dei pazienti, Peso DRG e numero ricoveri nel periodo '97-'07 nell'U.O. di Geriatria dell' H. Poliambulanza-BS

	1997-98	1999	2000	2001	2002	2003	2004	2005	2006	2007
			P.S.			UCSI				
	M±DS	M±DS	M±DS	M±DS	M±DS	M±DS	M±DS	M±DS	M±DS	M±DS
LOS	7.7±4.2	6.8±3.9	5.7±4.1	5.7±3.0	5.2±3.0	6.4±3.7	6.9±3.5	6.8±3.5	6.5±3.5	5.8±3.6
AGE	80.1±7.1	79.9±7.2	80.1±7.1	80.2±7.7	80.4±7.7	79.6±7.6	78.8±7.3	79.8±6.2	80.2±7.1	80.8±7.4
DRG	1.00	1.01	1.06	1.08	1.19	1.35	1.45	1.48	1.44	1.46
n=	990	1080	1220	1340	1410	1242	1178	1148	1214	1248

La percentuale dei pazienti che viene ricoverato in UCSI è del 33% dei pazienti che vengono ricoverati nell'U.O.

A silent ageism in access to critical care

In order to solve the problem of elderly patients admitted to our emergency room and who are in need of intensive care, the Board of our 350-bed hospital set up, at the beginning of 2003, a 4-bed sub-intensive care unit (SICU) for elderly patients within the geriatric department. In fact, the existing 8-bed intensive care unit (ICU) in the hospital had become progressively inadequate to support the needs of all the patients with critical medical conditions, of which the majority were elderly.

We ask the question as to whether, before the opening of the SICU, did most of the elderly patients admitted to the hospital receive adequate care?

***Age and Ageing* 2004; 33: 1**

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Do we need Delirium Units?

Delirium diagnosis in our Geriatric Ward

ACE-MU (n=3114)	**6.9%**
Sub Intensive Care Unit (n=401)	**31.2%**
Prevalent delirium	**16.7%**
Incident delirium	**15.5%**

Ranhoff AH, Aging Clin Exp Res. 2006

Characteristics of elderly patients admitted to a Sub-Intensive Care Unit-SICU according to presence of incident or prevalent delirium.

	No-Del M±SD(%)	Del-Inc M±SD(%)	Del-Prev M±SD(%)	*p*
Age	**77.5±8.6**	**80.5±9.4**	**80.0±9.1**	**0.039**
Gender (female)	**(50.9)**	**(46.7)**	**(48.1)**	***ns***
MMSE score (0-30)	**21.8±9.9**	**15.0±9.1**	**5.6±8.4**	***<0.001***
Barthel Index (two wks before adm)	**78.1±31.5**	**64.0±32.5**	**54.7±34.8**	***p<0.001***
Barthel Index (on admission)	**37.2±37.1**	**13.5±25.8**	**6.2±17.9**	***p<0.001***
Barthel Index (on discharge)	**60.6±37.2**	**33.1±30.7**	**11.6±22.8**	***p<0.001***
No. IADLs lost (two wks before adm)	**2.9±2.8**	**4.9±2.7**	**4.8±2.9**	***p<0.001***
Charlson Index (0-33)	**6.3±1.9**	**7.0±1.9**	**7.2±2.0**	***0.003***
Drugs (n)	**6.9±2.9**	**7.8±2.9**	**8.4±3.4**	***0.004***
APACHE II score (0-71)	**13.2±5.0**	**16.4±6.1**	**18.9±7.7**	***p<0.001***
APS	**7.7±4.7**	**10.8±5.9**	**13.2±7.4**	***p<0.001***
Serum albumin (g/dl)	**3.3±0.6**	**3.2±0.5**	**3.1±0.5**	***0.083***
Ratio Urea/Creatinine	**58.3±24.7**	**61.4±26.7**	**64.6±34.9**	***ns***
Vision loss	**(23.4)**	**(35.6)**	**(48.1)**	**<0.001**
Indwelling cathether	**(45.3)**	**(77.8)**	**(78.8)**	**<0.001**
LOS	**5.8+4.1**	**6.5+4.4**	**4.8+3.1**	***0.06***
NIV (N=87)	***56 (19.7)***	***17 (30.9)***	***14 (22.6)***	
Mortality	***(4.9)***	***(18.2)***	***(41.9)***	***p<0.001***

C-reactive protein and delirium in acute ill elderly patients

Data show that prevalent delirium, characterised by a worse health status, high disability, and, as previously reported, by a worse prognosis [4, 5] is associated with higher C-RP plasma levels, in comparison with incident delirium. This fact support the hypothesis that inflammation mediates different degree of vulnerability to delirium in older people.

ALESSANDRO MORANDI*, INTISSAR SLEIMAN, RENZO ROZZINI, MARCO TRABUCCHI

Age and Ageing, 2007

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Do we need Stroke Units?

Table 1. Characteristics of 1,380 Elderly Patients Admitted to a Geriatric Ward (2,002) and 313 Patients Admitted to a Sub–Intensive Care Unit (SICU) with (n = 33) or Without Stroke (n = 280)

Characteristic	Geriatric Ward	SICU with Stroke	SICU without Stroke
Age, mean ± SD	78.8 ± 9.3	76.5 ± 10.7	79.2 ± 9.0
Female, %	66	51	61
Mini-Mental State Examination score (0–30), mean ± SD	22.6 ± 7.2	20.4 ± 10.4	9.5 ± 10.9
Delirium, %	6.1	33.2	60.6
Global Deterioration Scale score (0–15), mean ± SD	5.2 ± 3.8	3.4 ± 3.4	3.8 ± 5.3
Barthel index, mean ± SD			
2 weeks before admission	84.9 ± 24.6	76.9 ± 30.5	50.1 ± 43.1
On admission	75.0 ± 28.2	28.4 ± 36.1	7.9 ± 21.5
On discharge	78.8 ± 26.2	36.8 ± 39.3	12.4 ± 26.4
Number of instrumental activities of daily living lost (2 weeks before admission), mean ± SD	3.3 ± 2.7	3.0 ± 2.9	5.1 ± 3.3
Charlson index (range 0–33), mean ± SD	6.9 ± 2.5	6.3 ± 2.1	7.4 ± 1.9
Number of medications	4.2 ± 3.1	7.1 ± 2.9	7.4 ± 3.5
Acute Physiology and Chronic Health Evaluation score (range 0–71), mean ± SD	8.2 ± 5.1	13.5 ± 6.3	16.7 ± 6.1
Serum albumin, g/dL, mean ± SD	3.9 ± 0.6	3.4 ± 0.6	3.2 ± 0.5
Serum cholesterol, mg/dL, mean ± SD	202.8 ± 54.2	175.1 ± 52.3	182.1 ± 40.5
Length of stay, mean ± SD	5.7 ± 1.8	5.5 ± 3.8	7.1 ± 5.1
In-hospital mortality, %	2.0	10.4	21.2

SD = standard deviation.

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Do we need Respiratory Units?

Table I. Characteristics of 115 patients admitted to a sub-intensive care unit (SICU) for the elderly and undergone non-invasive ventilation (NIV) due to acute exacerbations of chronic obstructive pulmonary disease (AECOPD)

Age (years) [M (±SD)]	78.3 (9.2)
Gender (female) [*n* (%)]	64 (56)
History of heavy alcohol use [*n* (%)]	4 (3.5)
History of heavy tobacco use [*n* (%)]	48 (41.7)
Barthel Index (0–100) at admission [M (±SD)]	11.3 (20.7)
Barthel Index (0–100) at discharge [M (±SD)]	41.4 (35.3)
MMSE score (0–30) at discharge [M (±SD)]	20.7 (9.3)
Charlson Index (0–33) [M (±SD)]	2.1 (1.5)
APACHE II score (0–71) [M (±SD)]	18.8 (5.8)
APACHE-APS subscore (0–33) [M (±SD)]	12.7 (5.7)
pH (on admission) [M (±SD)]	7.26 (0.1)
PO_2 (mmHg) (on admission) [M (±SD)]	55.5 (21.5)
PCO_2 (mmHg) (on admission) [M (±SD)]	71.0 (20.0)
S-Albumin (g/dl) [M (±SD)]	3.3 (0.5)
Maximum number of drugs (*n*) [M (±SD)]	9.8 (2.3)
Indwelling bladder catheter [*n* (%)]	91 (79.1)
Length of stay in SICU (h) [M (±SD)]	58.8 (59.4)
Not disabled and not demented [*n* (%)]	24 (20.9)
Disabled [*n* (%)]	59 (51.3)
Disabled and demented [*n* (%)]	32 (27.8)
Cumulative delirium [*n* (%)]	44 (38.3)

[a]Only survivors were considered.

Rozzini et al. Age&Ageing, 2006

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Caratteristiche cliniche dei 1155 pazienti (con o senza anamnesi di diabete) ricoverati in un'Unità di Cura Sub-Intensiva.

	Totale	Con diabete	Senza Diabete Valori di Glicemia		
			60-126 mg/dl	127-180 mg/dl	181-500 mg/dl
Pazienti	n=1155	n=333	n=516	n=202	n=104
	M± SD	M± SD	M± SD	M± SD	M± SD
Età,	79.2 (±8.4)	78.3 (±8.2)	79.5 (±8.7)	79.4 (±8.1)	80.4 (± 7.5)
Sesso (M), n (%)	572 (49.5)	164 (49.2)	246 (47.7)	108 (53.5)	53 (51.4)
Demenza-MMSE (0-30)	20.5 (±9.8)	20.4 (±9.4)	21.2 (±9.3)	18.9 (±11.1)	19.7 (±10.4)
Depressione-GDS	3.4 (±3.0)	3.7 (±3.1)	3.3 (±3.1)	3.3 (±3.2)	3.8 (±2.8)
Barthel Index (0-100)	69.7(±1.3)	67.1 (±32.4)	72.4 (±30.7)	69.0 (±31.1)	76.2 (±30.5)
Diagnosi principale n (%)					
SC, Aritmia	349 (30.2)	108 (32.4)			
Insufficienza respiratoria	532 (46.0)	150 (45)			
Stroke	105 (9.1)	28 (8.4)			
Sanguinamento GE	58 (5.0)	14 (4.2)			
Cancro	45 (3.9)	7 (2.1)			
Charlson Index (0-33)	6.3 (±1.9)	6.7 (±1.8)	5.9 (±1.9)	6.4 (±1.9)	6.6 (±1.7)
APS (0-33)	9.8 (±18.7)	9.3 (±5.6)	8.2 (±5.3)	13.4 (±4.9)	12.1 (±6.2)
Albumina (g/dl)	3.3 (±1.3)	3.4 (±2.3)	3.3 (±0.6)	3.3 (±0.6)	3.2 (±0.6)
Colesterolo (mg/dl)	166 (±50)	163.8 (±53.6)	167.0 (±49.6)	169.0 (±47.8)	160.0 (±46.1)
Farmaci	7.6 (±3.1)	8.3 (±3.0)	7.0 (±2.9)	7.6 (±3.1)	8.0 (±3.0)
NIV, n (%)	317 (27.4%)	103 (30.9%)	107 (20.8)	64 (31.7)	43 (41)
Ore in UCSI	72 (±60.7)	71.3 (±59)	74.3(±64.8)	69.3(±49.7)	67.1 (±63.3)
Giorni in Ospedale	6.5 (±5.1)	6.3 (±3.8)	7.0(±6.0)	6.2(±4.3)	5.6(±4.2)
Mortalità a 45 GG n (%)	257 (22.2)	71 (21.2)	90 (17.5)	52 (25.7)	44 (42)

Mortalità intraospedaliera in pazienti con e senza anamnesi di diabete secondo i diversi valori di glicemia.

	Glicemia			
	60-126 mg/dl Tot/eventi (%)	127-180 mg/dl Tot/eventi (%)	181-500 mg /dl Tot/eventi (%)	*p*
Con Diabete n (%)	125/11 (8.8)	73/10 (13.6)	135/17 (12.6)	*0.506*
Senza Diabete n (%)	516/58 (11.2)	202/35 (17.3)	104/36 (34.4)	*0.000*

Fattori associati alla mortalità intraospedaliera in pazienti anziani senza anamnesi di diabete ricoverati per patologia acuta in un'Unità di Cura Sub-Intensiva Geriatrica.

	N/eventi	Cruda	Aggiustata
Età (80+)	422/85	2.0 (1.3-3.0)	1.4 (0.8- 2.3)
Sesso maschile	408/59	0.8 (0.6-1.2)	0.9 (0.6-1.4)
Demenza (moderata-severa)	190/48	2.3 (1.5-3.4)	1.8 (1.1-2.9)
Albumina (<3.5 g/dl)	449/79	1.7 (1.1-2.6)	1.5 (1.0-2.5)
APS (≥ 7)	512/120	10.2 (5.1-20.4)	7.4 (3.9-14.4)
Charlson Index (≥ 6)	129/75	2.4 (1.6-3.5)	1.1 (0.7-1.8)
Barthel Index (pre-ricovero) (0-95)	530/117	6.5 (3.5-12.0)	3.2 (1.6-6.2)
Farmaci (n ≥ 9)	262/71	3.2 (2.2-4.7)	2.4 (1.6-3.8)
Gruppo a (glicemia: 60-126 mg/dl)	515/58	1.0 rif.	1.0 rif.
Gruppo b (glicemia: 127-180 mg/dl)	202/35	1.6 (1.0-2.6)	1.0 (0.6-1.7)
Gruppo c (glicemia >180 mg/dl)	105/36	4.1 (2.5-6.7)	2.7 (1.6-4.8)

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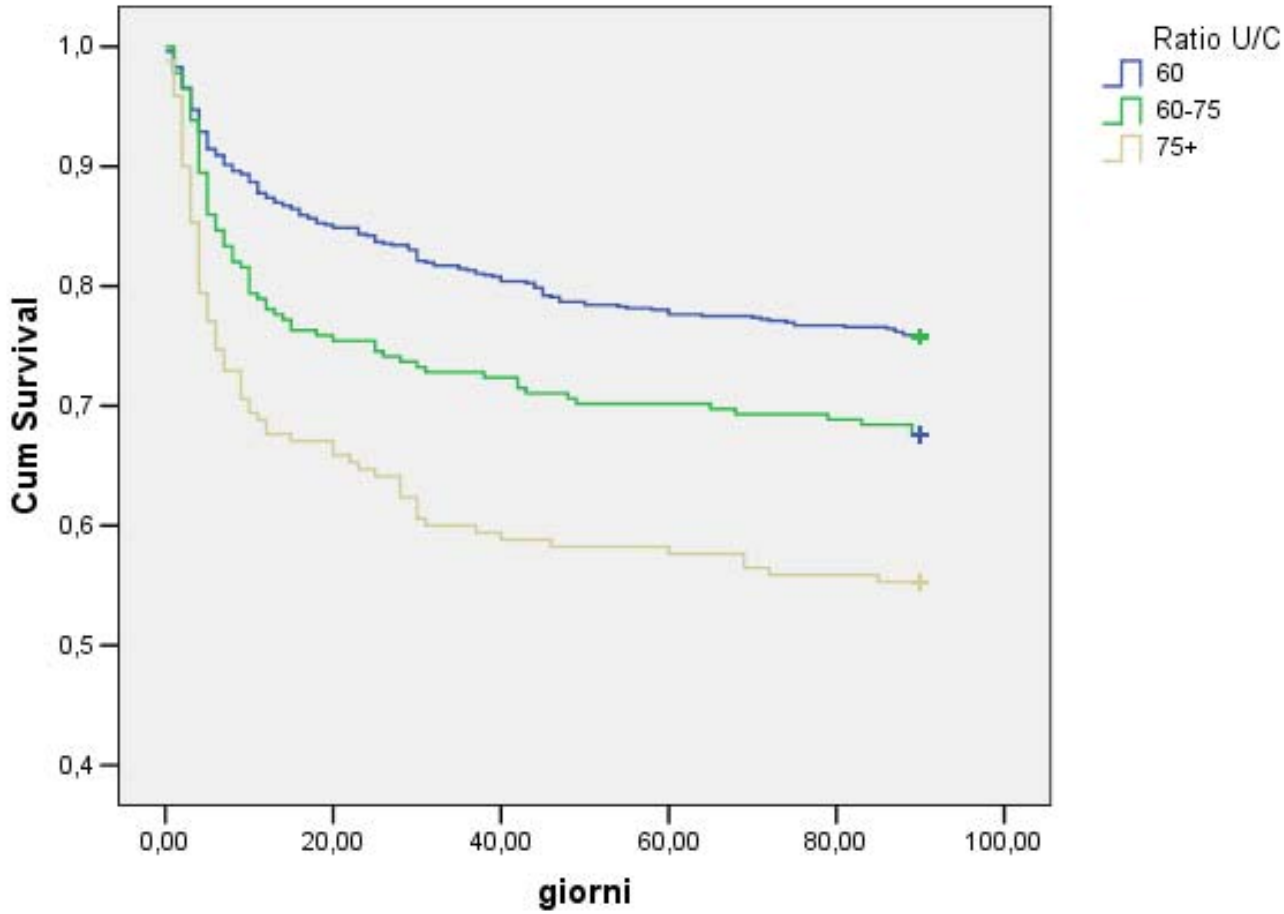
Caratteristiche di 1257 pazienti ricoverati in UCSI

	Mean	SD
Età	80,7	7,9
MMSE	18,7	10,2
Maschi (n=567)(%)	(45.5)	
Farmaci (n)	7,2	3,2
Malattie (n)	5,5	2,2
Charlson Index	6,2	2,0
IADL	4,2	2,8
Barthel Index (premorboso)	67,4	32,0
Barthel Index (ricovero)	34,5	36,3
Barthel Index (dimissione)	46,2	38,3
Albumina g/dl	3,3	0,6
Urea mg/dl	75.8	51.1
Creatininemia mg/dl	1.5	1.2
Urea/creatinininemia		
(<60) (n=760)(%)	(65.6)	
(60-74) (n=228)(%)	(19.7)	
(75+) (n=170)(%)	(14.7)	
APACHE II score	17,1	5,1
APS subsore	9,3	5,7
DRGW	1,9	2,1
LOS	7,2	5,1

Mortalità a 90 giorni in pazienti UCSI stratificati per rapporto urea/creatininemia



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Punti forti e criticità

L’Unità di Cura Sub-Intensiva (UCSI) geriatrica permette il trattamento efficace per un ampio range di pazienti anziani critici, avendo parte delle caratteristiche dell’unità coronarica (27.7%), della terapia intensiva respiratoria (42.9%), della stroke unit (11.0%) e della delirium room (31.0%).

Punti forti e criticità

Efficacia dell'UCSI: pazienti con gravità sovrapponibile (APACHE-APS >/=3) (n=125), quelli trattati in UCSI hanno presentato una minore mortalità intraospedaliera rispetto al reparto ordinario (12.5% versus 19.2%).

Un setting con un personale dedicato (UCSI) permette l'applicazione di procedure terapeutiche complesse (ad es. ventilazione non invasiva) anche in pazienti con disturbi del comportamento.

Punti forti e criticità

- **Ruolo all'interno dell'ospedale**
- **Rapporto con il DEA (non perfettamente chiarito)**
- **I problemi organizzativi**
- **Lo spirito dell'UCSI**
- **Il targeting (i pazienti UCSI); la possibilità di un "tetto delle cure più alto" per i pazienti disabili e dementi con un maggiore monitoraggio fa nascere aspetti problematici sul concetto del limite delle cure.**
- **La clinica dell'UCSI (strumenti valutativi e pazienti)**
- **Le aspettative legate alla "teatralità" delle cure…**
- **Il livello di conoscenza con alcuni aspetti tecnologici (terapie con pompa di infusione e criteri di somministrazione dei farmaci molto diversi dalla corsia ordinaria, terapia parzialmente invasiva (NIV) con conoscenza di criteri di applicazione maggiormente fisiopatologici e criteri temporalizzati di svezzamento).**

A Multicenter Description of Intermediate-Care Patients*

Comparison With ICU Low-Risk Monitor Patients

Christopher Junker, MD; Jack E. Zimmerman, MD; Carlos Alzola, MS; Elizabeth A. Draper, MS; and Douglas P. Wagner, PhD

Study objectives: To describe the characteristics and outcomes of patients admitted to intermediate-care areas (ICAs) and to compare them with those of ICU patients who receive monitoring only on day 1 and are at a low risk (*ie*, < 10%) for receiving subsequent active life-supporting therapy (*ie*, low-risk monitor patients).
Design: Nonrandomized, retrospective, cohort study.
Setting: Thirteen US teaching hospitals and 19 nonteaching hospitals.
Patients: A consecutive sample of 8,971 patients at 37 ICAs and 5,116 low-risk (*ie*, < 10%) monitor patients at 59 ICUs in 32 US hospitals.
Interventions: None.
Measurements and results: We recorded demographic and clinical characteristics, resource use, and outcomes for the ICA and ICU low-risk monitor patients. Patient data and outcomes for this study were collected concurrently or retrospectively. ICA and ICU low-risk monitor patients were similar in regard to gender, race, and frequency of comorbitities, but ICA patients were significantly ($p < 0.001$) older, had fewer physiologic abnormalities (mean acute physiology score, 16.7 vs 19.8, respectively), and were more frequently admitted due to nonoperative diagnoses. The mean length of stay for ICA patients was significantly longer (3.9 days) than for ICU low-risk monitor patients (2.6 days; $p < 0.001$). The hospital mortality rate was significantly higher for ICA patients (3.1%) compared to ICU low-risk monitor patients (2.3%; $p = 0.002$).
Conclusions: The clinical features of ICA patients are similar, but not identical to, those of less severely ill ICU monitor patients. Comparisons of hospital death rates and lengths of stay for these patients should be adjusted for characteristics that previously have been shown to influence these outcomes.
(CHEST 2002; 121:1253–1261)

Key words: critical care; facility design and construction; high dependency units; ICU; intermediate care; length of stay; resource allocation; triage

Abbreviations: APACHE = Acute Physiology and Chronic Health Evaluation; COTH = Council of Teaching Hospital; ICA = intermediate-care area

Outilines

- Il contesto
- La storia
  - La nostra storia
  - La storia delle SICU a livello internazionale
- Le aree di interesse
- La SICU a Brescia
  - Guidelines
  - Caratteristiche dei pazienti
  - Efficacia e ricadute sull'U.O.
- Ricerca e spunti di ricerca
  - Delirium
  - Stroke
  - Respiratory
  - Iperglicemia
  - Disidratazione
- Punti forti e criticità
- **Dove andiamo, dove andare**
- Conclusioni

Dove andiamo, dove andare

- **Ampliamento (?) e ristrutturazione dell'UCSI**
- **Linee guida per le patologie maggiormente rappresentate**
- **Consolidamento e attivazione di protocolli medico/infermieristici (esempi)**
  - **Protocollo PDC (Norton e Norton Plus) (ok)**
  - **Protocollo Delirium (CAM, RASS)(?←ok)**
  - **Protocollo NIV (?→?)**
  - **Protocollo Diabete Mellito (ok→?)**
  - **Protocollo Bilancio idrico (????)**
  - **Protocollo Malattie infettive (ok →ok)**
  - **CVC (?→?)**
- **Altre indicazioni (ad es. Ortogeriatria)**
- **Ricerca, ricerca, ricerca.**

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Conclusioni

Non sete, non molli tappeti,
ma, come nei libri hanno detto
da quattro mill'anni i Profeti,
un poco di paglia ha per letto.
Per quattro mill'anni s'attese
quest'ora su tutte le ore.
È nato! È nato il Signore!
È nato nel nostro paese!
Risplende d'un astro divino
La notte che già fu sì buia.
È nato il Sovrano Bambino.
È nato!
Alleluja! Alleluja!

La Notte Santa
Guido Gozzano