



Crowding ospedaliero in epoca COVID: un problema di tutti. La necessità di trovare una soluzione al fenomeno dell'exit block

L'impatto della pandemia sui pazienti no covid 2022

Relatore: Dottor Gabriele Savioli

Dottor Gabriele Savioli





L'impatto della
pandemia sui
pazienti
no covid 2022





L'impatto della
pandemia sui
pazienti
no covid 2022





L'impatto della
pandemia sui
pazienti
no covid 2022



Crowding ospedaliero



L'impatto della
pandemia sui
pazienti
no covid 2022



**Crowding ospedaliero 1.0
dalla letteratura
alla pandemia**

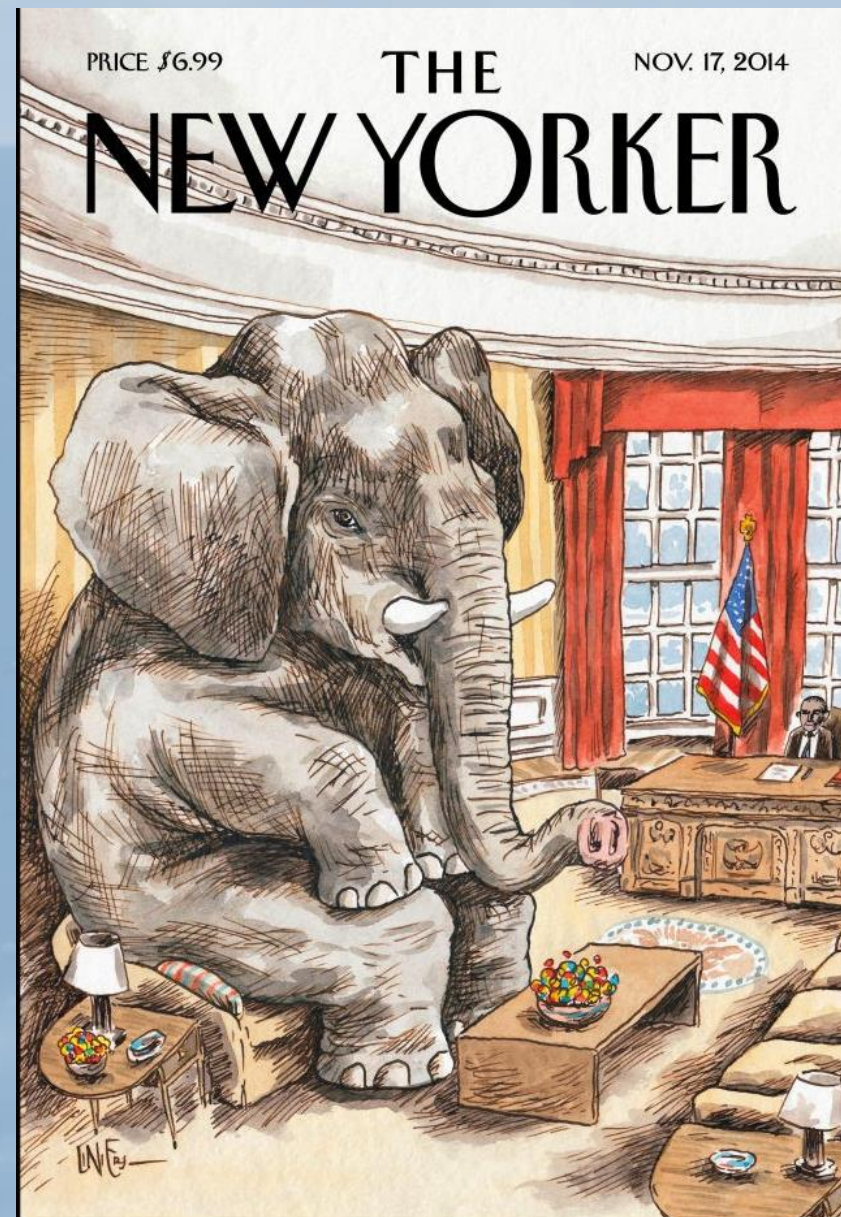
L'impatto della
pandemia sui
pazienti
no covid 2022


Sovraffollamento del Pronto Soccorso: Soccorso: ED-Crowding

Il Sovraffollamento del Pronto Soccorso è come un elefante che si trova in una stanza: è molto difficile descrivere

- quanto sia pesante
- quanto sia sgradevole
- fino a quando il pavimento reggerà

Pines JM: Moving closer to an operational definition for Emergency Department crowding. *Acad Emerg Med* 2007, 14:382-383.





L'impatto della
pandemia sui
pazienti
no covid 2022

Sovraffollamento del Pronto Soccorso: definizioni delle società scientifiche

American College of Emergency Physicians (ACEP)

L'affollamento si verifica quando la necessità identificata di servizi di emergenza supera le risorse disponibili per l'assistenza ai pazienti nel Pronto Soccorso, in ospedale o in entrambi.

Crowding. *Ann Emerg Med* 2006; **47**:585.

Canadian Association of Emergency Physicians (CAEP)

Il sovraffollamento del pronto soccorso si verifica quando la domanda di servizi di emergenza supera la capacità di un pronto soccorso di fornire assistenza di qualità entro tempi adeguati.

Canadian Association of Emergency Physicians. Emergency Department Overcrowding: Position Statement. 2009. [Http://caep.ca/sites/default/files/edoc_position_statement_board_approved_june_2009](http://caep.ca/sites/default/files/edoc_position_statement_board_approved_june_2009)

Australasian College of Emergency Medicine (ACEM)

Il sovraffollamento del Pronto Soccorso si riferisce alla situazione in cui la funzione dello stesso è ostacolata a causa del numero di pazienti in attesa di essere visti, di quelli sottoposti a valutazione e trattamento o di quelli in attesa di ricovero e tale ostacolo supera le capacità di accoglienza fisica (numero di letti e barelle) o del quella del personale del Pronto Soccorso.

Australasian College for Emergency Medicine. Statement on Emergency Department Overcrowding. 2006. http://www.acem.org.au/media/policies_and_guidelines/111012_S57_Emergency_Department_Overcrowding



L'impatto della
pandemia sui
pazienti
no covid 2022

Fattori che determinano il Sovraffollamento

Il Pronto Soccorso è affollato se l'ospedale è affollato.

- Fattori in ingresso (input factor)
- Fattori all'interno (throughput factors)
- Fattori in uscita (output factor)



Asplin BR, Magid DJ, Rhodes KV, Solberg LI, Lurie N, Camargo CA Jr. A conceptual model of emergency department crowding. *Ann Emerg Med.* 2003; 42(2):173±80.

<https://doi.org/10.1067/mem.2003.302> PMID: 12883504

Fattori che determinano il Sovraffollamento: fattori in ingresso

- Numero di pazienti
- Percentuale o numero di pazienti con codici di elevata priorità alla visita medica
- Percentuale o numero di pazienti necessitanti alta intensità di cure
- Numero di frequent flyers
- Tempi di attesa alla visita medica (totale e per codice di priorità alla visita medica).



Fattori che determinano il Sovraffollamento: fattori all'interno

- tempo di processo
- esami ematochimici e di laboratorio
- esecuzione imaging
- refertazione dell'imaging



Fattori che determinano il Sovraffollamento: fattori all'interno

- consulenza specialistica
- terapia
- monitoraggio del paziente
- osservazione del paziente
- tempo necessario tra le
esecuzione di un primo
esame e un esame di
controllo



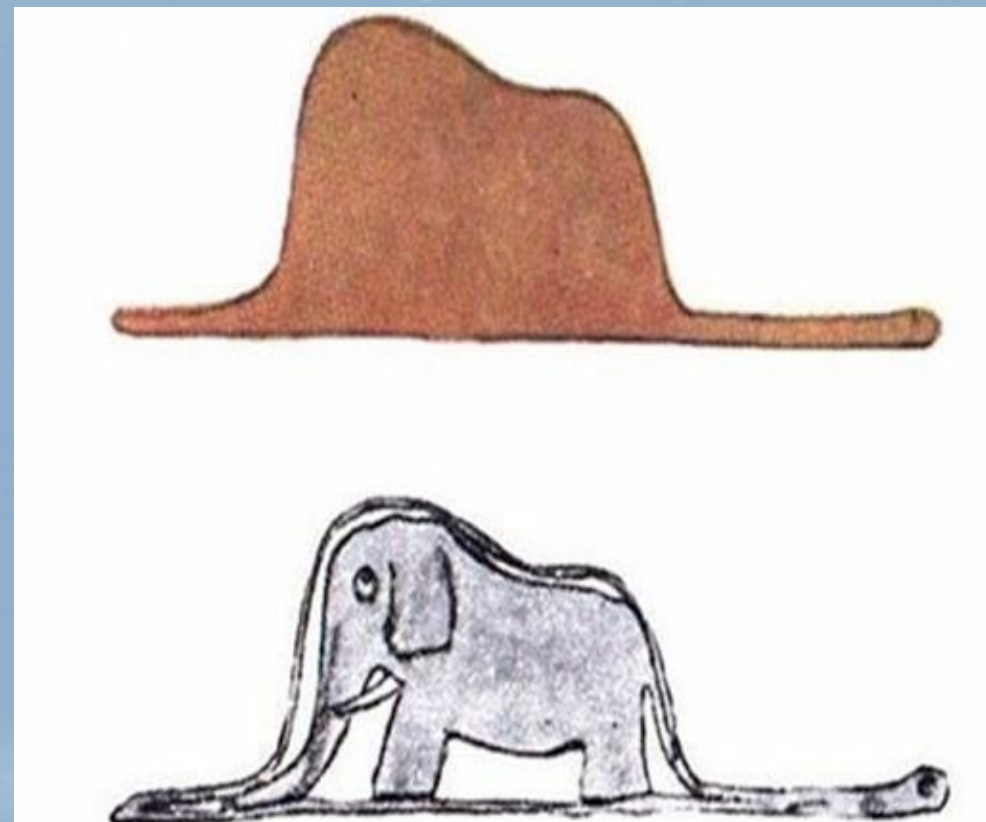
Fattori che determinano il Sovraffollamento: fattori all'interno

- Personale sanitario
- Livello di formazione del personale
- Esperienza del personale di turno
- Turni serrati
- Turni oltre le 6 ore



Fattori che determinano il Sovraffollamento: fattori in uscita

- mancanza di posto letto
- mancanza di caregiver o assistenza domiciliare adeguata
- ritardo nel mezzo di trasporto che deve portare il paziente dal Pronto Soccorso al Domicilio
- ritardo nel mezzo di trasporto che deve portare il paziente dal Pronto Soccorso al reparto
- tempo totale di stanza in Pronto Soccorso (LOS)



L'impatto della
pandemia sui
pazienti
no covid 2022

Riduzione a livello mondiale dei posti letto negli ospedali



- Richardson Myths versus facts in emergency department overcrowding and hospital access block. April 2009 The Medical journal of Australia
- Institute of Medicine, Committee on the Future of Emergency Care in the United States Health System. Hospital-based emergency care: at the breaking point. Washington, DC: National Academy Press, 2006.
- Ardagh M, Richardson S. Emergency department overcrowding. Can we fix it? *N Z Med J* 2004; 117: U774.
- Australasian College for Emergency Medicine. Policy document —standard terminology. *Emerg Med (Fremantle)* 2002; 14: 337-340.
- American College of Emergency Physicians. Crowding. *Ann Emerg Med* 2006; 47: 585.
- Hwang U, Concato J. Care in the emergency department: how crowded is overcrowded? *Acad Emerg Med* 2004; 11: 1097-1101.

L'impatto della
pandemia sui
pazienti
no covid 2022



Riduzione a livello mondiale dei posti letto negli ospedali

Boarding



- Jones SS, Allen TL, Flottemesch TJ, Welch SJ. An independent evaluation of four quantitative emergency department crowding scales. *Acad Emerg Med* 2006; 13: 1204-1211.
- Raj K, Baker K, Brierley S, Murray D. National emergency department overcrowding study tool is not useful in an Australian emergency department. *Emerg Med Australas* 2006; 18: 282-288.
- Hostetler MA, Mace S, Brown K, et al; Subcommittee on Emergency Department Overcrowding and Children, Section of Pediatric Emergency Medicine, American College of Emergency Physicians. Emergency department overcrowding and children. *Pediatr Emerg Care* 2007; 23: 507-515.
- Australian Institute of Health and Welfare. Australia's health 2008. Canberra: AIHW, 2008. (AIHW Cat. No. AUS 99.) <http://www.aihw.gov.au/publications/index.cfm/title/10585> (accessed Mar 2009).



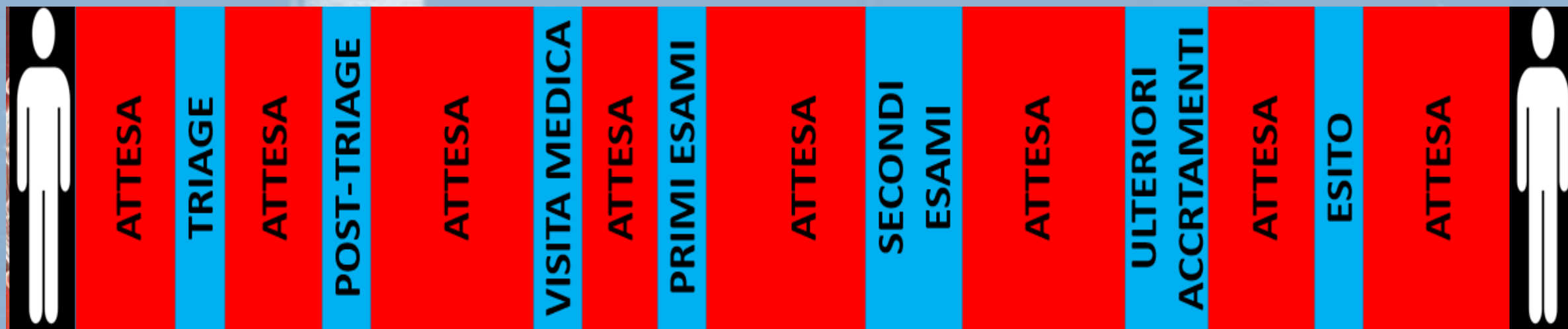
Posto letto è un bene prezioso

Admit to care → **Care to admit**

Ricoverare per curare → **Prendersi cura per ricoverare**

L'impatto della
pandemia sui
pazienti
no covid 2022

Esempio pratico: un paziente va in Pronto Soccorso



come il paziente percepisce la sua esperienza di Pronto Soccorso
se non consapevole dei meccanismi dello stesso

Di qui la necessità di informazione

Effetti del sovraffollamento

- Allungamento dei tempi
- Aumento della insoddisfazione del paziente



Australasian College for Emergency Medicine. Policy document — standard terminology. *Emerg Med (Fremantle)* 2002; 14: 337-340.

Richardson DB. Quantifying the effects of access block [abstract]. *Emerg Med (Fremantle)* 2001; 13: A10.

Bernstein SL, Aronsky D, Duseja R, et al. SAEM Emergency Department Crowding Task Force. The effect of emergency department crowding on clinically oriented outcomes. *AcadEmerg Med* 2009; 16: 1-10.

Cameron PA. Hospital overcrowding: a threat to patient safety? *Med J Aust* 2006; 184: 203-204.

Chalfin DB, Trzeciak S, Likourezos A, et al; DELAY-ED study group. Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Crit Care Med* 2007; 35: 1477-1483.

Sprivilis PC, Da Silva J-A, Jacobs IG, et al. The association between hospital overcrowding and mortality among patients admitted via Western Australian emergency departments. *Med J*

Aust 2006; 184: 208-212.

Richardson DB. Increase in patient mortality at 10 days associated with emergency department overcrowding. *Med J Aust* 2006; 184: 213-216.

Fatovich DM, Nagree Y, Sprivilis P. Access block causes emergency department overcrowding and ambulance diversion in Perth, Western Australia. *Emerg Med J* 2005; 22: 351-354.

Schull MJ, Morrison LJ, Vermeulen M, Redelmeier DA. Emergency department overcrowding and ambulance transport delays for patients with chest pain. *CMAJ* 2003; 168: 277-283.

Effetti del sovraffollamento

- Riduzione della qualità delle cure
- Non adeguata gestione del dolore



Australasian College for Emergency Medicine. Policy document — standard terminology. *Emerg Med (Fremantle)* 2002; 14: 337-340.

Richardson DB. Quantifying the effects of access block [abstract]. *Emerg Med (Fremantle)* 2001; 13: A10.

Bernstein SL, Aronsky D, Duseja R, et al. SAEM Emergency Department Crowding Task Force. The effect of emergency department crowding on clinically oriented outcomes. *Acad Emerg Med* 2009; 16: 1-10.

Cameron PA. Hospital overcrowding: a threat to patient safety? *Med J Aust* 2006; 184: 203-204.

Chalfin DB, Trzeciak S, Likourezos A, et al; DELAY-ED study group. Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Crit Care Med* 2007; 35: 1477-1483.

Sprivilis PC, Da Silva J-A, Jacobs IG, et al. The association between hospital overcrowding and mortality among patients admitted via Western Australian emergency departments. *Med J Aust* 2006; 184: 208-212.

Richardson DB. Increase in patient mortality at 10 days associated with emergency department overcrowding. *Med J Aust* 2006; 184: 213-216.

Fatovich DM, Nagree Y, Sprivilis P. Access block causes emergency department overcrowding and ambulance diversion in Perth, Western Australia. *Emerg Med J* 2005; 22: 351-354.

Schull MJ, Morrison LJ, Vermeulen M, Redelmeier DA. Emergency department overcrowding and ambulance transport delays for patients with chest pain. *CMAJ* 2003; 168: 277-283.

L'impatto della
pandemia sui
pazienti
no covid 2022

Effetti del sovraffollamento

- Aumento degli outcomes sfavorevoli
- Aumento della mortalità



Australasian College for Emergency Medicine. Policy document — standard terminology. *Emerg Med (Fremantle)* 2002; 14: 337-340.

Richardson DB. Quantifying the effects of access block [abstract]. *Emerg Med (Fremantle)* 2001; 13: A10.

Bernstein SL, Aronsky D, Duseja R, et al. SAEM Emergency Department Crowding Task Force. The effect of emergency department crowding on clinically oriented outcomes. *Acad Emerg Med* 2009; 16: 1-10.

Cameron PA. Hospital overcrowding: a threat to patient safety? *Med J Aust* 2006; 184: 203-204.

Chalfin DB, Trzeciak S, Likourezos A, et al; DELAY-ED study group. Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Crit Care Med* 2007; 35: 1477-1483.

Sprivilius PC, Da Silva J-A, Jacobs IG, et al. The association between hospital overcrowding and mortality among patients admitted via Western Australian emergency departments. *Med J Aust* 2006; 184: 208-212.

Richardson DB. Increase in patient mortality at 10 days associated with emergency department overcrowding. *Med J Aust* 2006; 184: 213-216.

Fatovich DM, Nagree Y, Sprivilius P. Access block causes emergency department overcrowding and ambulance diversion in Perth, Western Australia. *Emerg Med J* 2005; 22: 351-354.

Schull MJ, Morrison LJ, Vermeulen M, Redelmeier DA. Emergency department overcrowding and ambulance transport delays for patients with chest pain. *CMAJ* 2003; 168: 277-283.




L'impatto della
pandemia sui
pazienti
no covid 2022



L'impatto della
pandemia sui
pazienti
no covid 2022

Pandemia COVID-19





L'impatto della
pandemia sui
pazienti
no covid 2022



Crowding ospedaliero 2.0

La pandemia

UC Irvine

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health

ORIGINAL RESEARCH

Impact of Coronavirus Disease 2019 Pandemic on Crowding: A Call to Action for Effective Solutions to “Access Block”

Gabriele Savioli MD, PhD*#

Iride Francesca Ceresa*

MD, Roberta Guarnone, MD*

Alba Muzzi, MD†

Viola Novelli, MD†

Giovanni Ricevuti, PhD‡§

Giorgio Antonio Iotti, PhD¶

Maria Antonietta Bressan, MD*

Enrico Oddone, MD||

*Fondazione IRCCS Policlinico San Matteo, Department of Emergency Medicine, Pavia, Italy

†Fondazione IRCCS Policlinico San Matteo, Medical Direction, Pavia, Italy

‡University of Pavia, Department of Drug Science, Pavia, Italy

§Saint Camillus International University of Health Sciences, Department of Drug Science, Rome, Italy

¶Fondazione IRCCS Policlinico San Matteo, Intensive Care Unit, Pavia, Italy
University of Pavia, Department of Public Health, Experimental and Forensic Medicine,

||Pavia, Italy

#University of Pavia. Department of Clinical-Surgical, Diagnostic and Pediatric Sciences.

L'impatto della
pandemia sui
pazienti
no covid 2022


Internal and Emergency Medicine

<https://doi.org/10.1007/s11739-021-02732-w>

EM - ORIGINAL



How the coronavirus disease 2019 pandemic changed the patterns of healthcare utilization by geriatric patients and the crowding: a call to action for effective solutions to the access block

Gabriele Savioli^{1,2}  · Iride Francesca Ceresa¹ · Viola Novelli³ · Giovanni Ricevuti⁴ · Maria Antonietta Bressan¹ · Enrico Oddone⁵

Received: 26 November 2020 / Accepted: 30 March 2021

© The Author(s) 2021

Table 4. Selected time variables accounting for crowding, by period.

	Period*	Observations	Mean	Standard error	Sum	P ^a
Wait time (min)	Control period	51,405	83	0.36	-	
	Pandemic	6,729	66	0.98	-	<0.001
LOS (min)	Control period	51,405	314	1.84	-	
	Pandemic	6,729	625	11.36	-	<0.001
Process time (min)	Control period	51,405	231	1.81	-	
	Pandemic	6,729	560	11.30	-	<0.001

*The considered pandemic period was February 21–May 1, 2020. The control period was the sum of the timespans January 1–May 1, 2018; January 1–May 1, 2019; and January 1–February 20, 2020.

^at-test.

^bMean calculated only for hospitalized patients.

^cAccess block total time and boarding total time calculated only for hospitalized patients; by definition, it is not an average but the sum of each patient's access block times. Access block total time and boarding total time were calculated from February 21–May 1, 2020 for the pandemic period and as the mean of the periods February 21–May 1, 2019, and February 21–May 1, 2018 for the control period.

Min, minute; LOS, length of stay.

Impact of COVID-19 Pandemic on Crowding

Savioli et al.

Table 5. Risk of overtime for selected time variables accounting for crowding, by period.

	Period*	OR ^a	95% Confidence interval	P
LOS	Control period	1.00 (Ref.)	-	
	Pandemic	2.58	2.40-2.78	<0.001
Boarding	Control period	1.00 (Ref.)	-	
	Pandemic	2.67	2.46-2.89	<0.001
Access block	Control period	1.00 (Ref.)	-	
	Pandemic	2.52	2.33-2.72	<0.001

*The considered pandemic period was February 21–May 1, 2020. The control period was the sum of the timespans January 1–May 1, 2018; January 1–May 1, 2019; and January 1–February 20, 2020.

^aORs estimated by multiple regression analysis adjusted by age, gender, priority code at triage, presence of fever or respiratory symptoms, and need for moderate to high-intensity care.

LOS, length of stay; OR, odds ratio.

Table 4. Selected time variables accounting for crowding, by period.

	Period*	Observations	Mean	Standard error	Sum	P ^a
Access block time per patient ^b (min)	Control period	3,183	718	11.81	-	<0.001
	Pandemic	1,260	1223	40.29	-	
Access block total time aggregate ^c (hours)	Control period	3,183	-	-	5,420 ^c	-
	Pandemic	1,260	-	-	22,653 ^c	
Boarding time per patient ^b (min)	Control period	3,183	640	13.42	-	<0.001
	Pandemic	1,260	1150	45.35	-	
Boarding total time aggregate ^c (hours)	Control period	3,183	-	-	6,970 ^c	-
	Pandemic	1,260	-	-	25,954 ^c	

Impact of COVID-19 Pandemic on Crowding

Savioli et al.

Table 3. Selected reasons for access to emergency department for patients included in the study, by period of observation.

	Period*		P ^a	Total
	Control	Pandemic		
Minor medical issues				
No (%)	44,629 (86.8)	6,057 (90.0)		50,686 (87.2)
Yes (%)	6,780 (13.2)	672 (10)	<0.001	7,452 (12.8)
Minor trauma				
No (%)	39,692 (77.2)	5,954 (88.5)		45,646 (78.5)
Yes (%)	11,717 (22.8)	775 (11.5)	<0.001	12,492 (21.5)
Major trauma				
No (%)	51,182 (99.6)	6,725 (99.9)		57,907 (99.6)
Yes (%)	227 (0.4)	4 (0.1)	<0.001	231 (0.4)
Occupational accident				
No (%)	49,710 (96.7)	6,569 (97.6)		56,279 (96.8)
Yes (%)	1,699 (3.3)	160 (2.4)	<0.001	1,859 (3.2)

Impact of COVID-19 Pandemic on Crowding

Savioli et al.

Table 3. Selected reasons for access to emergency department for patients included in the study, by period of observation.

	Period*		P ^a	Total
	Control	Pandemic		
Disease with fever				
No (%)	49,790 (96.8)	5,572 (82.8)		55,362 (95.2)
Yes (%)	1,619 (3.1)	1,157 (17.2)	<0.001	2,776 (4.8)
Respiratory symptoms				
No (%)	48,085 (93.5)	5,836 (86.8)		53,921 (92.8)
Yes (%)	3,324 (6.5)	893 (13.3)	<0.001	4,217 (7.3)
Thoracic pain				
No (%)	47,227 (91.9)	6,136 (91.2)		53,363 (91.8)
Yes (%)	4,182 (8.1)	593 (8.8)	0.057	4,775 (8.2)
Neurologic disease				
No (%)	48,364 (94.1)	6,222 (92.5)		54,586 (93.9)
Yes (%)	3,045 (5.9)	507 (7.5)	<0.001	3,552 (6.1)

L'impatto della
pandemia sui
pazienti
no covid 2022


Impatto della pandemia sul sovraffollamento

Internal and Emergency Medicine

<https://doi.org/10.1007/s11739-021-02732-w>

EM - ORIGINAL

How the coronavirus disease 2019 pandemic changed the patterns of healthcare utilization by geriatric patients and the crowding: a call to action for effective solutions to the access block

Gabriele Savioli^{1,2}  · Iride Francesca Ceresa¹ · Viola Novelli³ · Giovanni Ricevuti⁴ · Maria Antonietta Bressan¹ ·



Dottor Gabriele Savioli

Crowding Indices

Causes of Crowding

Crowding of EDs has been reported for several decades. Our study found that input factors played a modest/ ambivalent role in crowding in this pandemic. ED crowding had two main causes: the worsening of output and throughput factors. With regard to output factors, crowding was caused by the access block phenomenon and in particular by an

important for both ensuring appropriate emergency surge capacity and providing evidence to redesign emergency services to decrease healthcare-related infections after disease outbreak.

Various Causes of ED Visits

During the pandemic there was a net reduction in some reasons for ED visits such as minor trauma or minor medical issues, confirming the reduction of low-acuity visits. Although the percentage of patients who had febrile symptoms at home was much higher during the pandemic, the proportion of patients who had fever at triage was not increased. This is also likely attributable to the fact that body temperature has been measured in a greater number of patients during the pandemic (53.2% vs 12.7% before the pandemic).

Crowding Indices

Causes of Crowding

Crowding of EDs has been reported for several decades. Our study found that input factors played a modest/ ambivalent role in crowding in this pandemic. ED crowding had two main causes: the worsening of output and throughput factors. With regard to output factors, crowding was caused by the access block phenomenon and in particular by an unprecedented need for care in medium- and high-intensity care units.¹ In a study conducted prior to this pandemic, through tabletop simulations of a potential maxi-emergency, our research group had anticipated that such a scenario was possible. In particular, we had shown how wards with high- and medium-intensity care could most easily determine boarding time and access block.¹⁷

With regard to throughput factors

an epidemic spread and ED visits decrease, preparations for serious conditions must be focused, and patients with severe diseases should not face barriers to emergency care. This situation also underlines the need to consider “clean” or low-risk infectious pathways for the most serious reasons for ED visits.

wards in which the risk of infection had to remain low.

With regard to throughput factors, crowding has resulted from changes in the role of emergency physicians and EDs. Emergency departments are no longer merely where patients are sorted into specialist departments; patients are now treated and stabilized, and differential diagnostic tests

Western Journal of Emergency Medicine

8

Articles in Press

Savioli et al.

Impact of COVID-19 Pandemic on Crowding

are performed in the ED. This change in the level of care has been exacerbated in the pandemic because of the high number of critically ill patients who require stabilization before transfer to the hospital wards, and the change in patient management caused by the pandemic. In particular, the need for frequent checks, ventilatory therapies, nasal

To improve the practice of boarding patients, the American College of Emergency Physicians (ACEP) established a task force to develop a list of low-cost, high-impact solutions.⁴²⁻⁴³ One of the key solutions proposed by ACEP is the use of a full-capacity protocol.⁴¹ Although this was an effective response, the need for effective solutions for

Impatto della pandemia sul sovraffollamento

- La attività di Pronto Soccorso ordinaria prosegue
- Riduzione dell'influenza dei fattori di affollamento in ingresso
- Aumento dei fattori di affollamento all'interno
- Aumento dei fattori di affollamento in uscita



How the coronavirus disease 2019 pandemic changed the patterns of healthcare utilization by geriatric patients and the crowding: a call to action for effective solutions to the access block

Gabriele Savioli^{1,2} · Iride Francesca Ceresa¹ · Viola Novelli³ · Giovanni Ricevuti⁴ · Maria Antonietta Bressan¹ .

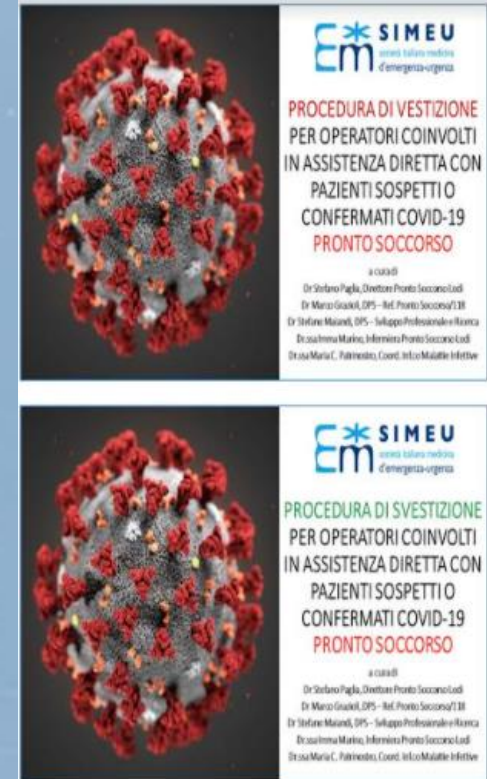
Impact of Coronavirus Disease 2019 Pandemic on Crowding: A Call to Action for Effective Solutions to “Access Block”

Gabriele Savioli MD, PhD**
Iride Francesca Ceresa*

*Fondazione IRCCS Policlinico San Matteo, Department of Emergency Medicine,
Pavia, Italy

Fattori di affollamento all'interno dovuti alla pandemia

- vestizione e svestizione
- disinfezione delle sale e degli ambienti
- l'esito del tampone
- comunicazione telefonica con i familiari
- agevolare il dialogo dei pazienti ricoverati con i loro parenti



How the coronavirus disease 2019 pandemic changed the patterns of healthcare utilization by geriatric patients and the crowding: a call to action for effective solutions to the access block

Gabriele Savioli^{1,2} · Iride Francesca Ceresa¹ · Viola Novelli³ · Giovanni Ricevuti⁴ · Maria Antonietta Bressan¹ ·

Impact of Coronavirus Disease 2019 Pandemic on Crowding: A Call to Action for Effective Solutions to “Access Block”

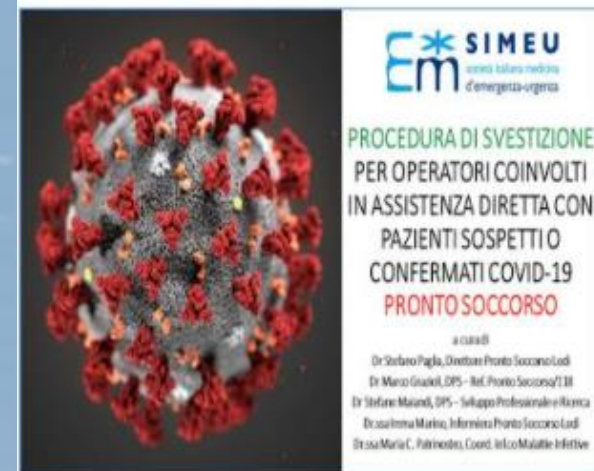
Gabriele Savioli MD, PhD**
Iride Francesca Ceresa*

*Fondazione IRCCS Policlinico San Matteo, Department of Emergency Medicine,
Pavia, Italy



Fattori di affollamento all'interno dovuti alla pandemia

- i tempi di esecuzione della terapia
- i flussi che abbiamo visto separati ab inizio implicano lo sdoppiamento, o ancor meglio, il raddoppio del lavoro per la stessa Equipe medico infermieristica e di personale del sistema dell'urgenza.
- Occorre seguire pazienti su più flussi, flussi che non si possono incrociare.



How the coronavirus disease 2019 pandemic changed the patterns of healthcare utilization by geriatric patients and the crowding: a call to action for effective solutions to the access block

Gabriele Savioli^{1,2} · Iride Francesca Ceresa¹ · Viola Novelli³ · Giovanni Ricevuti⁴ · Maria Antonietta Bressan¹ ·

Impact of Coronavirus Disease 2019 Pandemic on Crowding: A Call to Action for Effective Solutions to “Access Block”

Gabriele Savioli MD, PhD**
Iride Francesca Ceresa*

*Fondazione IRCCS Policlinico San Matteo, Department of Emergency Medicine, Pavia, Italy

With regard to output factors

Savioli et al.

However, it is important to emphasize that all patients, even those in need of low-intensity care, have struggled against access block. Therefore, the lack of beds seems to be the main cause of access block. Our opinion is that EDs are crowded when hospitals are crowded. The waiting time for

Impact of COVID-19 Pandemic on Crowding

Savioli et al.

low-acuity conditions most strongly decrease when the risk of infection overwhelms the benefits of emergency service use. The rate of visits for serious conditions did not decline in the same manner. Even the inputs for high-acuity diseases, albeit stable in percentage terms, were reduced, although to a smaller degree. This is the case, for example, with presentations for chest pain and neurological disorders. This has been highlighted by some studies which reported an increase in late diagnoses.⁴⁷⁻⁵⁰ When fears of an epidemic spread and ED visits decrease, preparations for serious conditions must be focused, and patients with severe diseases should not face barriers to emergency care. This situation also underlines the need to consider “clean” or low-risk infectious pathways for the most serious reasons for ED visits.

However, it is important to emphasize that all patients, even those in need of low-intensity care, have struggled against access block. Therefore, the lack of beds seems to be the main cause of access block. Our opinion is that EDs are crowded when hospitals are crowded. The waiting time for hospitalization was also prolonged because it was necessary to screen all patients before assigning them to a “clean” vs COVID-unit bed to ensure that infected (and perhaps asymptomatic) patients were not admitted to “clean” wards or wards in which the risk of infection had to remain low.

With regard to throughput factors, crowding has resulted from changes in the role of emergency physicians and EDs. Emergency departments are no longer merely where patients are sorted into specialist departments; patients are now treated and stabilized, and differential diagnostic tests

Fattori di affollamento in uscita dovuti alla pandemia

- Fenomeno del Boarding per ricovero per attesa tampone pre-ricovero dal PS ai reparti.
- Exit block per attesa tampone pre-dimissione dei pazienti dall'ospedale.



How the coronavirus disease 2019 pandemic changed the patterns of healthcare utilization by geriatric patients and the crowding: a call to action for effective solutions to the access block

Gabriele Savioli^{1,2} · Iride Francesca Ceresa¹ · Viola Novelli³ · Giovanni Ricevuti⁴ · Maria Antonietta Bressan¹ ·

Impact of Coronavirus Disease 2019 Pandemic on Crowding: A Call to Action for Effective Solutions to “Access Block”


Gabriele Savioli MD, PhD**
Iride Francesca Ceresa*

*Fondazione IRCCS Policlinico San Matteo, Department of Emergency Medicine,
Pavia, Italy

With regard to output factors

crowding was caused by:


1. the access block phenomenon
2. and in particular by an unprecedented need for care in medium- and high-intensity care units.



L'impatto della
pandemia sui
pazienti
no covid 2022



Crowding ospedaliero 3.0 cose attese e cose inattese



L'impatto della
pandemia sui
pazienti
no covid 2022

Il fatto che tale fabbisogno fosse senza precedenti significa che non potevamo aspettarcelo?



L'impatto della
pandemia sui
pazienti
no covid 2022

Coronavirus disease 2019 (COVID-19)

PubMed.gov

savioli g

Advanced

Search results

Save

Email

> [Open Access Emerg Med.](#) 2020 Nov 16;12:377-387. doi: 10.2147/OAEM.S267069. eCollection 2020.

Preparing for the Maximum Emergency with a Simulation: A Table-Top Test to Evaluate Bed Surge Capacity and Staff Compliance with Training

Iride Francesca Ceresa ¹, Gabriele Savioli ^{1 2}, Valentina Angeli ³, Viola Novelli ⁴, Alba Muzzi ⁴, Giuseppina Grugnetti ⁵, Lorenzo Cobianchi ⁶, Federica Manzoni ⁷, Catherine Klersy ⁷, Paolo Lago ⁸, Pierantonio Marchese ⁹, Carlo Marena ⁴, Giovanni Ricevuti ¹⁰, Maria Antonietta Bressan ¹¹

Affiliations + expand

PMID: 33235525 PMCID: PMC7678714 DOI: 10.2147/OAEM.S267069

[Free PMC article](#)

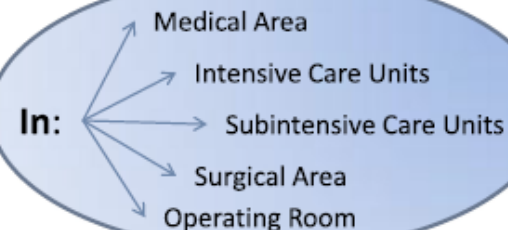
Coronavirus disease 2019 (COVID-19)

Ceresa et al

Dovepress

Bed surge capacity. Infographic sketching

Evaluation of the proportion of dismissible patients



Hospital setting

- ✓ public hospital
- ✓ City of Pavia (Italy)
- ✓ over 1000 accredited beds
- ✓ catchment area of 700 thousand inhabitants.
- ✓ 37,000 hospitalizations all
- ✓ over 245,000 days of hospitalization;
- ✓ 4,700,000 performances outpatient;
- ✓ 100,000 Emergency Department visits
- ✓ 650,000 emergency-urgency services;
- ✓ over 30,000 surgical interventions
- ✓ average of 2,000 births per year;
- ✓ over 230 transplants every year.

Table top simulation

- through :**
- 2 Phases
 - four scenarios (3 with regard to Phase 1 and 1 for Phase 2)
 - at 2 (T2) and 24 (T24) hours after a simulated maximum emergency

Performed by:

1 Phase

105 subjects :
68 doctors on guard
36 nurses

2 Phase

18 subjects :
18 Nursing Coordinator

when: On weekdays and holidays

Coronavirus disease 2019 (COVID-19)

classification of patients to find dismissible ones

A	patient's need for a high-intensity care
B	patient's need for a intensity care equal to that provided at the time of detection one
C	Patients who are able to transfer to either a bed with a below-current level of care/intensity
D	Patients who are able to transfer in a hypothetical discharge-room
E	Patients who are able to transfer in a hospital with a lower intensity of care/rehabilitation structure
F	Patients who are able to safe home discharge

patients evaluated

Phase 1: 3 simulation waves (I, II, III) performed at T2 and T24.

2.326 assessments were carried out on an average of 388 hospitalized patients
I T2: 369, I T24: 399; II T2: 399, II T24: 387; III T2: 413, III T24: 385

Phase 2: 1 simulation waves (I) performed at T2 and T24

699 Assessments
285 T2 and 414 T24 patients


Conclusions

- The availability of beds in the simulations is greater than the theoretical bed surge capacity
- Intensive and Sub-Intensive Areas limit the Hospital Bed Surge Capacity
- Age is a parameter that influences the Bed Surge Capacity
- The availability of DEA ORs are not a problem during an ME
- The analysis of response times allowed to see how the compliance increased with the recurrence of the surveys.

L'impatto della
pandemia sui
pazienti
no covid 2022

Cosa potevamo aspettarci?
Cosa dovevamo aspettarci?






L'impatto della
pandemia sui
pazienti
no covid 2022



Epidemie



L'impatto della
pandemia sui
pazienti
no covid 2022




CAMBIA L'UTILIZZO DEL PRONTO SOCCORSO DURANTE LA PANDEMIA ?

Epidemie e utilizzo del Pronto Soccorso

Le epidemie possono avere effetti diversi sul comportamento dei pazienti a seconda dei tassi di mortalità e dell'impatto emotivo dell'epidemia stessa sulla popolazione. È probabile che le epidemie con alti tassi di mortalità ridurranno gli accessi al sistema sanitario ma aumenteranno il numero di pazienti gravi. Tuttavia, epidemie con tassi di mortalità inferiori e minori effetti emotivi possono comportare un maggiore utilizzo dell'assistenza sanitaria.

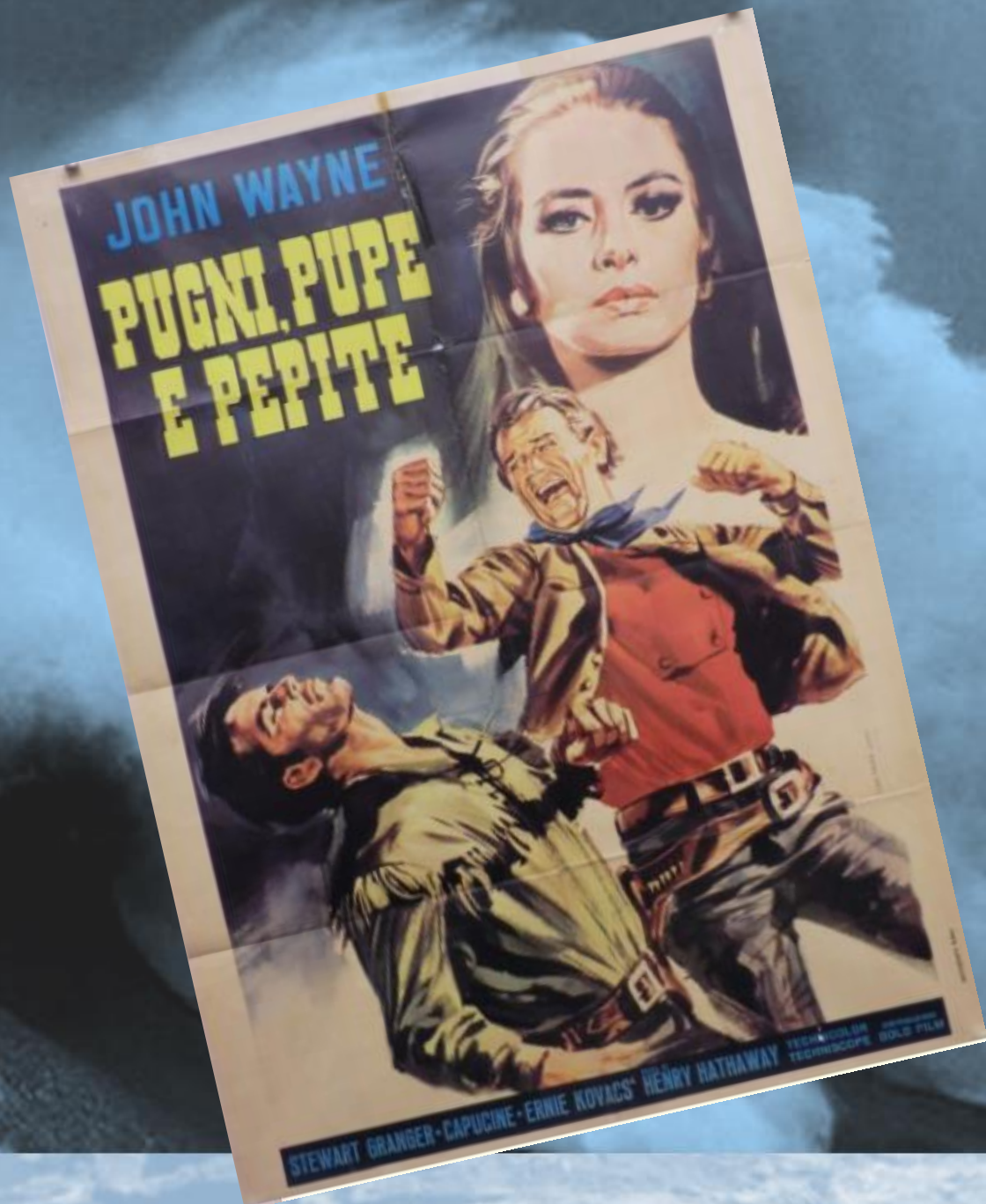
- Chang HJ, Huang N, Lee CH, Hsu YJ, Hsieh CJ, Chou YJ. The impact of the SARS epidemic on the utilization of medical services: SARS and the fear of SARS. *Am J Public Health* 2004;94:562-4.
- Fagbuyi DB, Brown KM, Mathison DJ, Kingsnorth J, Morrison S, Saidinejad M, et al. A rapid medical screening process improves emergency department patient flow during surge associated with novel H1N1 influenza virus. *Ann Emerg Med* 2011;57:52-9.
- Costello BE, Simon HK, Massey R, Hirsh DA. Pandemic H1N1 influenza in the pediatric emergency department: a comparison with previous seasonal influenza outbreaks. *Ann Emerg Med* 2010;56: 643-8.
- Chen TA, Lai KH, Chang HT. Impact of a severe acute respiratory syndrome outbreak in the emergency department: an experience in Taiwan. *Emerg Med J* 2004;21:660-2.
- Paek SH, Kim DK, Lee JH, Kwak YH. The impact of Middle East respiratory syndrome outbreak on trends in emergency department utilization patterns. *J Korean Med Sci* 2017;32:1576-80.
- Jeong H, Jeong S, Oh J, Woo SH, So BH, Wee JH, et al. Impact of Middle East respiratory syndrome outbreak on the use of emergency medical resources in febrile patients. *Clin Exp Emerg Med* 2017;4:94-101.
- Cho SY, Kang JM, Ha YE, Park GE, Lee JY, Ko JH, et al. MERS-CoV outbreak following a single patient exposure in an emergency room in South Korea: an epidemiological outbreak study. *Lancet* 2016;388:994-1001.
- Ro JS, Lee JS, Kang SC, Jung HM. Worry experienced during the 2015 Middle East Respiratory Syndrome (MERS) pandemic in Korea. *PLoS One* 2017;12:e0173234.
- Lu TH, Chou YJ, Liou CS. Impact of SARS on healthcare utilization by disease categories: implications for delivery of healthcare services. *Health Policy* 2007;83:375-81.
- Sun Young Lee, Young-Ho Khang, and Hwa-Kyung Lim, Impact of the 2015 Middle East Respiratory Syndrome Outbreak on Emergency Care Utilization and Mortality in South Korea; *Yonsei Med J* 2019 Aug;60(8):796-803 <https://doi.org/10.3349/ymj.2019.60.8.796>
- Elston JW, Moosa AJ, Moses F, et al. Impact of the Ebola out-break on health systems and population health in Sierra Le-one. *J Public Health (Oxf)* 2016;38:673-8.
- Ki M. 2015 MERS outbreak in Korea: hospital-to-hospital transmission. *Epidemiol Health* 2015;37:e2015033.
- Kim Y, Oh D, Kang M. Productivity changes in OECD health-care systems: bias-corrected Malmquist productivity ap-proach. *Int J Health Plann Manage* 2016;31:537-53.



L'impatto della
pandemia sui
pazienti
no covid 2022

Epidemics and emergency department utilization

Tutto questo è valso anche per la COVID-19 pandemic.



Crowding ospedaliero 4.0 rissa tra miti e fatti

Miti da sfatare sul sovraffollamento del Pronto Soccorso e sul fenomeno dell' Access Block

ACCESS BLOCK

Myths versus facts in emergency department overcrowding and hospital access block

Drew B Richardson and David Mountain

Richardson Myths versus facts in emergency department overcrowding and hospital access block. April 2009 The Medical journal of Australia

Myths versus facts in Emergency Department Crowding and Hospital Access Block

- Gli accessi “impropri” o “da medico di base” causano il sovraffollamento
- Il sovraffollamento è in gran parte il risultato dei pazienti che devono essere ricoverati ma permangono in PS in attesa di letti di degenza adeguati

- Nagree Y, Erclve TN, Sprivilis PC. After-hours general practice clinics are unlikely to reduce low acuity patient attendances to metropolitan Perth emergency departments. *Aust Health Rev* 2004; 28: 285-291.
- Richardson Myths versus facts in emergency department overcrowding and hospital access block. April 2009 *The Medical journal of Australia*
- Dent AW, Phillips GA, Chenhall AJ, McGregor LR. The heaviest repeat users of an inner city emergency department are not general practice patients. *Emerg Med (Fremantle)* 2003; 15: 322-329.
- Sprivilis P. Estimation of the general practice workload of a metropolitan teaching hospital emergency department. *Emerg Med (Fremantle)* 2003; 15: 32-37.
- Colineaux H, Pelissier F, Pourcel L, et al. *Emerg Med J* 2019;36:548–553

Original article

Why are people increasingly attending the emergency department? A study of the French healthcare system

Helene Colineaux,^{1,2} Fanny Pelissier,³ Laure Pourcel,³ Thierry Lang,^{1,2}
Michelle Kelly-Irving,² Olivier Azema,³ Sandrine Charpentier,^{2,4} Sebastien Lamy²

Conclusion and implication

Since at least 2002, there has been an increase in visits to the ED, independently of population size increase or structural changes. It appears that the increase is not attributable to non-severe visits but rather to moderately severe visits.

Comparison of Presenting Complaint vs Discharge Diagnosis for Identifying “Nonemergency” Emergency Department Visits

Maria C. Raven, MD, MPH, MSc

Robert A. Lowe, MD, MPH

Judith Maselli, MSPH

Renee Y. Hsia, MD, MSc

Importance Reduction in emergency department (ED) use is frequently viewed as a potential source for cost savings. One consideration has been to deny payment if the patient's diagnosis upon ED discharge appears to reflect a “nonemergency” condition. This approach does not incorporate other clinical factors such as chief complaint that may inform necessity for ED care.

Conclusions and Relevance Among ED visits with the same presenting complaint as those ultimately given a primary care–treatable diagnosis based on ED discharge diagnosis, a substantial proportion required immediate emergency care or hospital admission. The limited concordance between presenting complaints and ED discharge diagnoses suggests that these discharge diagnoses are unable to accurately identify nonemergency ED visits.

JAMA. 2013;309(11):1145-1153

www.jama.com

Myths versus facts in Emergency Department Crowding and Hospital Access Block

- Il sovraffollamento è il risultato di un numero eccessivo di pazienti che arrivano e aspettano di essere visti da un medico
- Gli accessi dei pazienti al PS sono aumentate, ma il numero di pazienti in attesa di vedere un medico rimane inferiore al numero in attesa di un letto ospedaliero

Myths versus facts in Emergency Department Crowding and Hospital Access Block

- Il sovraffollamento può essere ridotto costruendo PS più grandi
- L'aumento delle dimensioni del PS è associato a un aumento del sovraffollamento


Myths versus facts in Emergency Department Crowding and Hospital Access Block

- Il sovraffollamento non influenza gli esiti dei pazienti
- Il sovraffollamento ha gravi effetti negativi sui processi ospedalieri, sulla qualità delle cure e sugli esiti dei pazienti, inclusa la mortalità

- Pines JM, Iyer S, Disbot M, Hollander JE, Shofer FS, Datner EM (2008) The effect of emergency department crowding on patient satisfaction for admitted patients. *Acad Emerg Med* 15(9):825–831
- Richardson Myths versus facts in emergency department overcrowding and hospital access block. April 2009 *The Medical Journal of Australia*
- Richardson DB (2002) The access-block effect: relationship between delay to reaching an inpatient bed and inpatient length of stay. *Med J Aust* 177(9):492–495
- Krochmal P, Riley TA (1994) Increased health care costs associated with ED overcrowding. *Am J Emerg Med* 12(3):265–266
- Liu SW, Thomas SH, Gordon JA, Hamedani AG, Weissman JS (2009) A pilot study examining undesirable events among emergency department-boarded patients awaiting inpatient beds. *Ann Emerg Med* 54(3):381–385. doi:10.1016/j.annemergmed. 2009.02.001
- Richardson DB (2006) Increase in patient mortality at 10 days associated with emergency department overcrowding. *Med J Aust* 184(5):213–216
- Sprivilis PC, Da Silva JA, Jacobs IG, Frazer AR, Jelinek GA (2006) The association between hospital overcrowding and mortality among patients admitted via Western Australian emergency departments. *Med J Aust* 184(5):208–212
- Cardosos LT, Grion CM, Matsuo T, Anami EH, Kauss IA, Seko L, Bonametti AM (2011) Impact of delayed admission to intensive care units on mortality of critically ill patients: a cohort study. *Crit Care* 15(1):R28. doi:10.1186/cc9975
- Bernstein SL, Aronsky D, Duseja R, Epstein S, Handel D, Hwang U, McCarthy M, John McConnell K, Pines JM, Rathlev N, Schafermeyer R, Zwemer F, Schull M, Asplin BR, Society for Academic Emergency Medicine, Emergency Department Crowding Task Force (2009) The effect of emergency department crowding on clinically oriented outcomes. *Acad Emerg Med* 16:1–10. doi:10.1111/j.1553-2712.2008.00295.x
- Plunkett PK, Byrne DG, Breslin T, Bennett K, Silke B (2011) Increasing wait times predict increasing mortality for emergency medical admissions. *Eur J Emerg Med* 18:192–196. doi:10.1097/MEJ.0b013e328344917e
- Guttman A, Schull MJ, Vermeulen MJ, Stukel TA (2011) Association between waiting times and short-term mortality and hospital admission after departure from emergency department: population based cohort study from Ontario, Canada. *BMJ* 342:d2983. doi:10.1136/bmj.d2983
- Zoubir Boudi, Dominique Lauque, Mohamed Alsabri, Linda Ostlundh, Churchill Oneyji, Anna Khalemsky, Carlos Lojo Rial, Shan W. Liu, Carlos A. Camargo, Jr., Elhadi Aburawi, Martin Moeckel, Anna Slagman, Michael Christ, Adam Singer, Karim Tazarourte, Niels K. Rathlev, Shamai A. Grossman, Abdelouahab Bellou; Association between boarding in the emergency department and in-hospital mortality: A systematic review; *PLOS ONE* | <https://doi.org/10.1371/journal.pone.0231253> April 15, 2020

Myths versus facts in Emergency Department Crowding and Hospital Access Block

- Le cause del sovraffollamento si trovano all'interno del PS
- Le cause e le soluzioni al sovraffollamento si trovano al di fuori del PS



L'impatto della
pandemia sui
pazienti
no covid 2022



Crowding ospedaliero 5.0 la soluzione e le soluzioni tampono

Una disfunzione dell'intero ospedale richiede una risposta dell'intero ospedale o dell'intero sistema

È noto che alti livelli di sovraffollamento sono associati a una cattiva funzionalità ospedaliera e del sistema, cure inefficienti e aumento degli episodi di sovraffollamento ospedaliero e ED. In effetti, è una constatazione universale che operare a piena capacità per periodi prolungati sia inefficiente e insostenibile.

Hostetler MA, Mace S, Brown K, et al; Subcommittee on Emergency Department Overcrowding and Children, Section of Pediatric Emergency Medicine, American College of Emergency Physicians. Emergency department overcrowding and children. *Pediatr Emerg Care* 2007; 23:507-515.

Cameron PA. Hospital overcrowding: a threat to patient safety? *Med J Aust* 2006; 184: 203-204.

Richardson DB. Reducing patient time in the emergency department. *Med J Aust* 2003; 179: 516-517.

Una disfunzione dell'intero ospedale richiede una risposta dell'intero ospedale o dell'intero sistema

Il sovraffollamento del PS è meglio visto come un indicatore di disfunzione dell'intero ospedale che richiede una risposta dell'intero ospedale o dell'intero sistema. La disponibilità di posti letto dipende non solo dal numero fisico di letti, ma anche dal modo in cui il letto viene gestito (uso appropriato, buone pratiche di flusso), usi concorrenti per i letti (ad esempio, cure elettive contro cure acute), la disponibilità di unità dedicata alla dimissioni e un'adeguata assistenza comunitaria.

Figure coinvolte nella risposta sono molteplici:

- Medici/infermieri del sistema dell'urgenza
- Medici/infermieri dell'ospedale
- Medici di base
- Politici
- Cittadini

Soluzioni proposte input factor

- Diminuire uso degli ED:
 - educational/increase health literacy; potenziare accessi alle cure primarie e alle cure specialistiche
 - Affrontare i social determinants of health (vita sedentaria, alimentazione...)

Soluzioni proposte throughput factor

- Adeguato organico
- Adeguata formazione dell'organico presente
- Alliging staffing with census and volume
- Divisione di flussi (per intensità di cura, acuti non acuti..)
- Fast track
- percorsi standardizzati per sottogruppi di pazienti (disturbi mentali, pazienti geriatrici, bambini...)

Soluzioni proposte throughput-output factor

- Centralized hospital-wide operations center
 - Bed turnover, servizi di trasporto, servizio di pulizie (housekeeping)
 - Use of alcove and hallway beds
 - Transferring certain cohorts of patients to affiliated hospital for inpatient care

Soluzioni proposte throughput-output factor

- Hospital-wide surge plan
 - Riprogrammare le procedure elettive
 - Sospensione attività ambulatoriale per reclutamento di personale
 - Posticipare l'imaging ambulatoriale
 - Reclutamento staff ancillare

Sheikhbardsiri H, Raeisi AR, Nekoei-moghadam M, et al. Surge capacity of hospitals in emergencies and disasters with a preparedness approach: a systematic review. *Disaster Med Public Health Prep* 2017;11(5):612–20.

Adalja AA, Watson M, Bouri N, et al. Absorbing citywide patient surge during Hurricane Sandy: a case study in accommodating multiple hospital evacuations. *Ann Emerg Med* 2014;64(1):66–73.e1.

Soluzioni proposte throughput-output factor

• Observation or short stay units

- Baugh CW, Venkatesh AK, Bohan JS. Emergency department observation units: a clinical and financial benefit for hospitals. *Health Care Manage Rev* 2011;36(1):28–37.
- Rutman L, Migita R, Spencer S, et al. Standardized asthma admission criteria reduce length of stay in a pediatric emergency department. *Acad Emerg Med* 2016;23(3):289–96.
- Lee IH, Chen CT, Lee YT, et al. A new strategy for emergency department crowding: high-turnover utility bed intervention. *J Chin Med Assoc* 2017;80(5):297–302.
- Konnyu KJ, Kwok E, Skidmore B, et al. The effectiveness and safety of emergency department short stay units: A rapid review. *Open Med* 2012;6(1):10–6.
- Role of a Brief Intensive Observation area with a dedicated team of doctors in the management of acute heart failure patients: a retrospective observational study.
- Gabriele Savioli, Iride Francesca Ceresa, Federica Manzoni, Giovanni Ricevuti, Maria Antonietta Bressan, Enrico Oddone; *Medicina (Kaunas)*. 2020 May 21;56(5):251. doi: 10.3390/medicina56050251.PMID: 32455837
- Brief Intensive Observation areas in the management of acute heart failure in elderly patients leading to high stabilisation rate and less admissions
- Gabriele Savioli, Iride Francesca Ceresa, Elena Novara, Tonia Persiano, Francesca Grulli, Giovanni Ricevuti, Maria Antonietta Bressan, Enrico Oddone. *Journal of Gerontology and Geriatrics*. In press.

Factors Affecting Emergency Department Crowding



James F. Kenny, MD^{a,*}, Betty C. Chang, MD^a, Keith C. Hemmert, MD^b

Observation or short stay units

Other strategies that can impact hospital admissions are disposition pathways. These programs represent a bridge between microlevel and macrolevel factors because they lay at the intersection of ED and inpatient care.⁶⁸ One such strategy is building an observation unit or a short stay unit. After the initial evaluation and management in the ED, some patients may require additional time for evaluation and treatment, but not enough to warrant a full hospital admission. Rapid treatment and evaluation units or observation units fulfill this role by serving as an extension of treatment initiated in the ED. To decompress ED crowding, these units are often geographically separated from the ED.⁶⁹

Certain illness and disease processes are highly conducive to observation admissions where objective criteria for risk stratification can help to streamline care. Conditions such as asthma, cellulitis, congestive heart failure, nonspecific abdominal pain, chest pain, and acute kidney injury have been shown to be safely managed within an observation setting, which can often avoid many of the time and staffing constraints of inpatient units.⁶⁰ Observation units can decrease ED boarding by moving a cohort of patients who would have otherwise occupied in-patient hospital beds to more temporary units, thus freeing up inpatient beds and resources for critically ill patients and ED beds for undifferentiated patients.^{55,70}

L'impatto della
pandemia sui
pazienti
no covid 2022

Factors Affecting Emergency Department Crowding



James F. Kenny, MD^{a,*}, Betty C. Chang, MD^a, Keith C. Hemmert, MD^b






medicines



Article

Impact of ED Organization with a Holding Area and a Dedicated Team on the Adherence to International Guidelines for Patients with Acute Pulmonary Embolism: Experience of an Emergency Department Organized in Areas of Intensity of Care

Gabriele Savioli ^{1,2,*} , Iride Francesca Ceresa ¹, Paolo Maggioni ¹ , Massimiliano Lava ³,
Giovanni Ricevuti ⁴, Federica Manzoni ⁵, Enrico Oddone ⁶  and Maria Antonietta Bressan ¹






medicina



Article

Role of a Brief Intensive Observation Area with a Dedicated Team of Doctors in the Management of Acute Heart Failure Patients: A Retrospective Observational Study

Gabriele Savioli ^{1,2,*} , Iride Francesca Ceresa ¹, Federica Manzoni ³, Giovanni Ricevuti ⁴ ,
Maria Antonietta Bressan ⁵ and Enrico Oddone ⁶ 

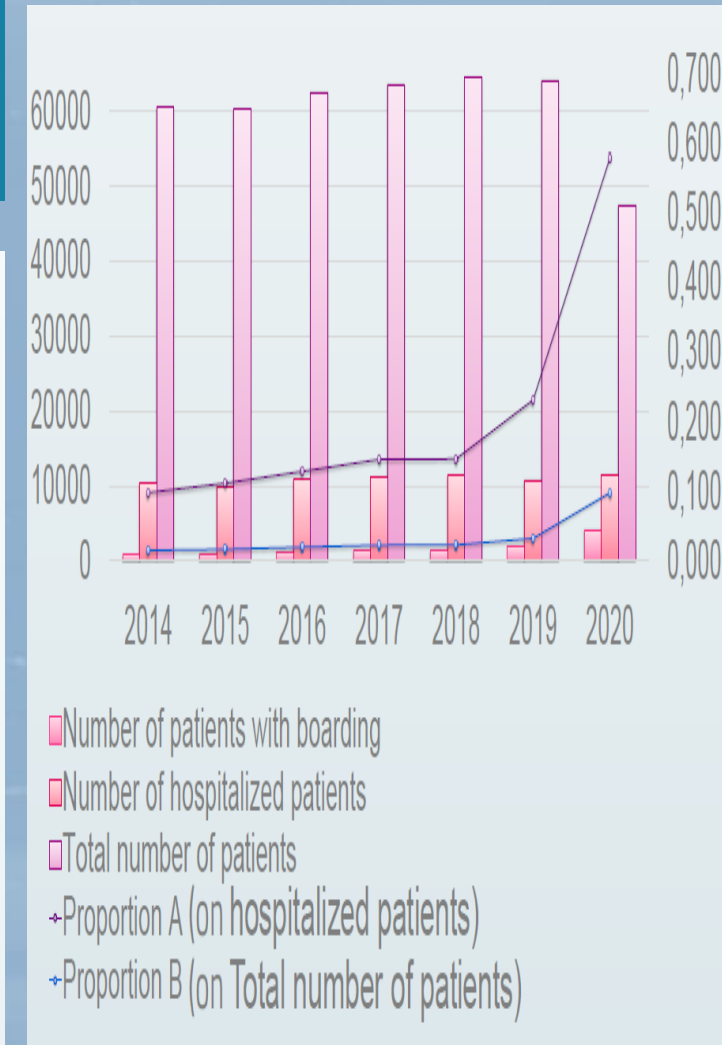


OBI TEAM as a crowding solution: coordination of flows, stabilization of complex patients, boarding management, bed management

Gabriele Savioli 1, Iride Francesca Ceresa¹, Viola Novelli⁵, Alba Muzzi⁵, Giovani Ricevuti⁴, Enrico Oddone², Maria Antonietta Bressan³.

1. Emergency Department, IRCCS Policlinico San Matteo, 27100 Pavia, Italy; 2 Assistant Professor, Department of Public Health, Experimental and Forensic Medicine, University of Pavia, 27100 Pavia, Italy; 3. Past Director Emergency Department, IRCCS Policlinico San Matteo, 27100 Pavia, Italy; 4 Department of Drug Science, University of Pavia, Italy, - Saint Camillus International University of Health Sciences - Rome - Italy; 5 Direzione Medica di Presidio, IRCCS Policlinico San Matteo, 27100 Pavia, Italy

	2014	2015	2016	2017	2018	2019	2020	p for trend
Boarding#								
No	9,404	9,030	9,617	9,792	10,041	8,781	7,291	
	91.0%	89.9%	88.6%	87.2%	87.2%	81.2%	63.3%	
Yes	926	1,010	1,241	1,431	1,475	2,033	4,230	
	9.0%	10.1%	11.4%	12.8%	12.8%	18.8%	36.7%	< 0.001
Exit Block#								
No	9,544	9,089	9,717	9,934	10,148	8,792	7,688	
	92.4%	90.5%	89.5%	88.5%	88.1%	81.3%	66.7%	
Yes	786	951	1,141	1,289	1,368	2,022	3,833	
	7.6%	9.5%	10.5%	11.5%	11.9%	18.7%	33.3%	< 0.001
Accesses/day	165.8	165.3	170.8	174.4	176.8	175.8	129.8	
N.accesses	60,512	60,336	62,527	63,662	64,540	64,181	47,500	





Soluzioni proposte throughput-output factor

Medical home or hospital-at-home programs

Factors Affecting Emergency Department Crowding




James F. Kenny, MD^{a,*}, Betty C. Chang, MD^a, Keith C. Hemmert, MD^b


Medical homes or hospital-at-home programs

Medical homes or hospital-at-home programs are another novel way to decrease overall hospital admissions. Here, select cohorts of patients are discharged home after their initial treatment in the ED. Patients can now stay in the comfort of their homes, while clinicians are deployed to continue the care.⁷¹ The hospital may consider enacting a med-to-bed program to ensure that care is not interrupted during the peridischarge period. Medications that will be needed after the initial treatment are dispensed to patients at discharge.

Technological innovations such as telemedicine and continuous remote vital sign monitoring can enhance this alternative.⁷² Using telemedicine, patients can be followed closely by a clinician after discharge from the ED, and can also receive other services remotely (consultants, care managers, social workers, etc). Although understudied, these hospital-at-home programs can likely decrease ED boarding by diverting less acute patients home while maintaining some of the benefits of an inpatient stay.



L'impatto della
pandemia sui
pazienti
no covid 2022



**Crowding ospedaliero 6.0
prepararsi
o
essere preparati?**

L'impatto della
pandemia sui
pazienti
no covid 2022

Eravamo pronti? Avremmo potuto esserlo di più?



Coronavirus disease 2019 (COVID-19)

- Eravamo pronti?
- Avremmo dovuto essere pronti?
- Come ci siamo preparati?
- Come ci siamo comportati?
- Cosa abbiamo imparato?



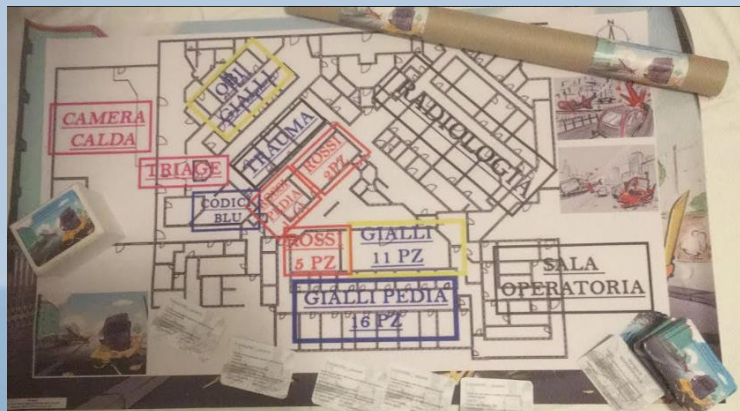
Coronavirus disease 2019 (COVID-19)



Il personale era già abituato a lavorare nelle aree di terapia intensiva, ed erano stati precedentemente eseguiti corsi e simulazioni che coinvolgevano l'intero ospedale, utilizzando i piani dei tavoli per far fronte a varie situazioni di maxi-emergenza, un afflusso massiccio di pazienti con lesioni e malattie batteriologiche e chimiche.

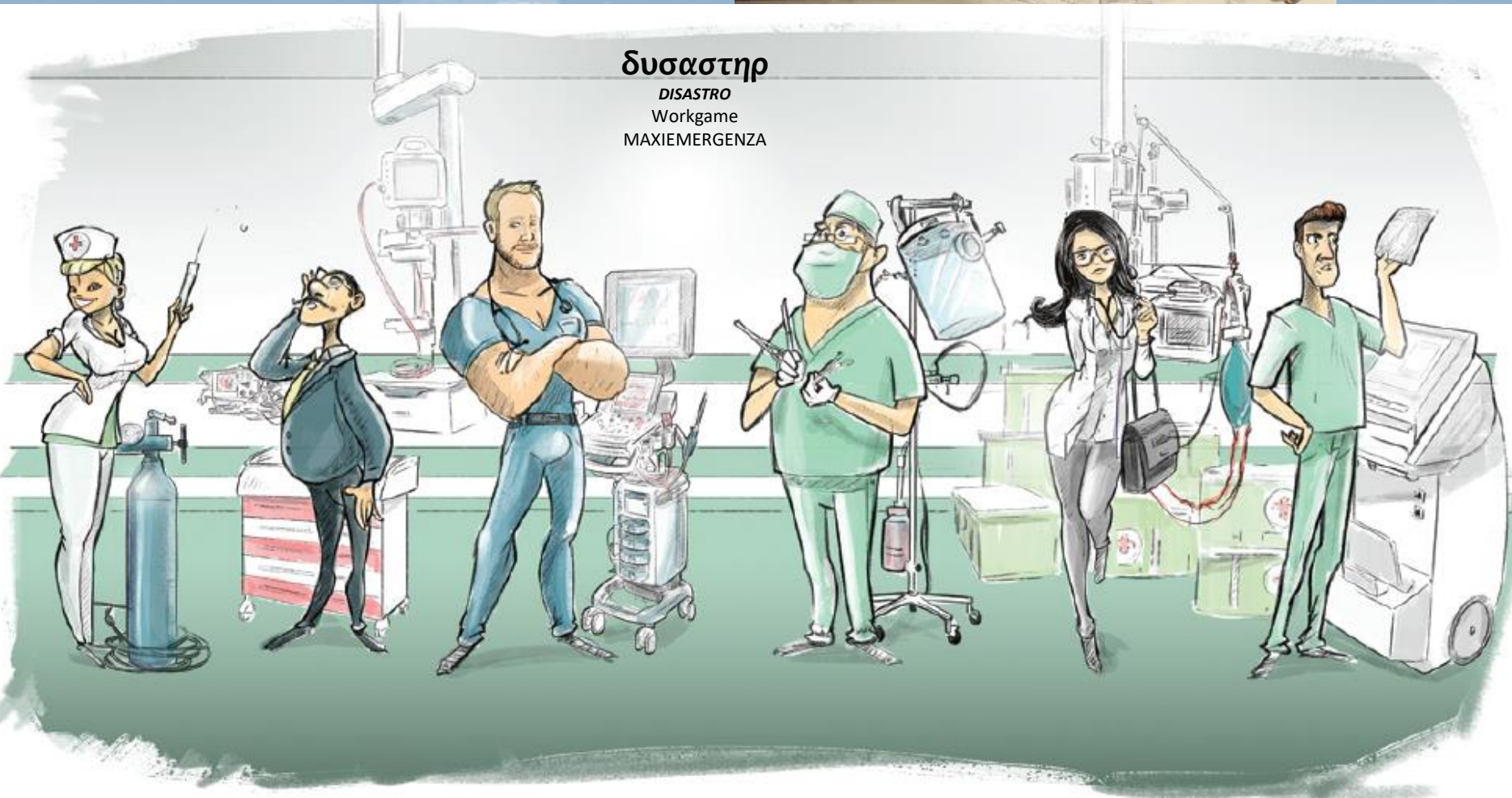
Ceresa IF, Savioli G, Angeli V, Novelli V, Muzzi A, Grugnetti G, Cobiauchi L, Manzoni F, Klersy C, Lago P, Marchese P, Marena C, Ricevuti G, Bressan MA. Preparing for the Maximum Emergency with a Simulation: A Table-Top Test to Evaluate Bed Surge Capacity and Staff Compliance with Training. Open Access Emerg Med. 2020 Nov 16;12:377-387. doi: 10.2147/OAEM.S267069. PMID: 33235525; PMCID: PMC7678714.

L'impatto della
pandemia sui
pazienti
no covid 2022



δυσαστηρ

DISASTRO
Workgame
MAXIEMERGENZA



Workgame MAXIEMERGENZA

- **SCENARIO:**
 - Allante amatoriale si scontra con veicolo leggero di scuola di volo.
 - I mezzi precipitano su crocevia autostradale ferroviario.
 - Precipitando l'aliante ha impatto con treno passeggeri mentre il veicolo su raccordo stradale impatta con camion con trasporto di prodotti chimici esplosivi e finisce la sua corsa schiantandosi contro casa di vicino centro abitato.
 - Segue incidente automobilistico con dinamica frontale e tamponamento multiplo
- **REGOLAMENTO:**
 - assegna un codice colore triage secondo il protocollo START a ciascuna carta paziente. Quindi prosegui nel gestire la maxi emergenza nel tuo ospedale avvalendoti della mappa ospedale.

L'impatto della
pandemia sui
pazienti
no covid 2022



Presto saremo chiamati a scegliere
tra ciò che è giusto e ciò che è facile

The image depicts a theater stage. In the foreground, there are several rows of empty, dark red seats. The stage floor is a bright red. In the background, two large, red, textured curtains are pulled back to reveal a blue backdrop. Centered on the backdrop is a large, dark blue target graphic with three concentric circles. The words "The" and "End" are written in a white, serif font, stacked vertically and slightly tilted to the right, within the target graphic.

The
End

L'impatto della
pandemia sui
pazienti
no covid 2022

GRAZIE DELL'ATTENZIONE!!

gabrielesavioli@gmail.com



Dottor Gabriele Savioli



Ogni fine è un nuovo inizio

Ci sarà sempre un'altra opportunità, un'altra amicizia, un altro amore, una nuova forza

(Il Piccolo Principe, Antoine de Saint-Exupéry).