Septic shock in France from 2009 to 2014: incidence, outcome, and associated costs of care.

Claire Dupuis[1,2], Lila Bouadma[1,2], Stéphane Ruckly[1], Anne Perozziello[1], Jean-Claude Buzzi[3] ,Bruno Mourvillier[1,2], Sébastien Bailly[1],Romain Sonneville[1,2], Jean-François Timsit[1,2]

1 UMR 1137 - IAME Team 5 – DeSCID: Decision SCiences in Infectious Diseases, control and care Inserm/ Univ Paris Diderot, Sorbonne Paris Cité, F-75018 Paris, France;; 2 Medical and Infectious Intensive Care Unit, AP-HP, Hôpital Bichat Claude Bernard, Paris Diderot University, Paris, F-75018, France;; 3 Biostatistic Department, Unité de recherche Clinique, Paris Nord, France

Introduction

Despite decades of research and significant improvement in medical management, septic shock remains a major health care burden and a leading cause of death worldwide[1,2,3].

Maintaining up-to-date epidemiologic data is of paramount importance to know incidence, death rate and temporal trends.

Until now, most of the data came from the North American, Australian and North European administrative databases, but not from a French registry [3]

Moreover, none of these studies specifically focused on septic shock.

The aim of this study was to perform an updated description of septic shock in France, between 2009 and 2014 and to explore temporal trends in clinical characteristics, case-mix, costs and outcomes.

Methods

The PMSI-MCO database

Collects annually, for each hospital stay in France, a uniform hospital discharge record including diagnostic codes according to the International Classification of diseases, Tenth revision, Clinical Modification (ICD-10th-CM) and procedure codes according to the CCAM (Classification Commune des Actes Médicaux).

1. Vincent, AJRCCM, 2015; 2. Dellinger, ICM, 2013; 3. Fleschmann, AJRCCM, 2015; 4 Quan, Med Care 2005.

Inclusion

>18 y.o.; hospital stays between 2009 and 2014; registered in the French healthcare system databases (PMSI)
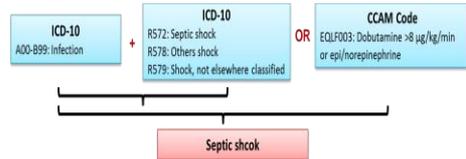

The following data were obtained:

Case mix, comorbidities (ICD-10 algorithms for the Charlson's score[4]); type of infection, severity, characteristics of hospital stays, outcomes (death, length of stay), incomes based on the price of Homogeneous group stay (GHS)

Statistical analyses:

Temporal trends via linear regression or Cochran Armitage Trend Test for continuous and categorical variables respectively.
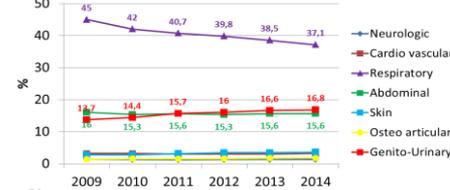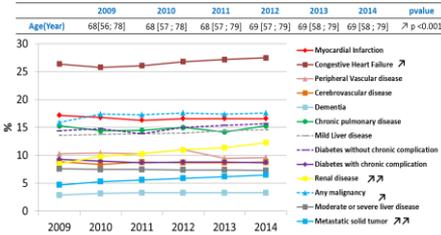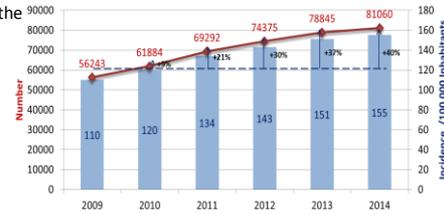
Results

### Flow chart
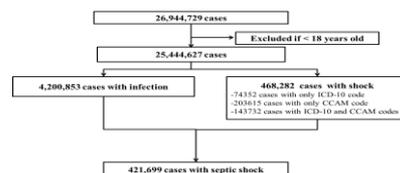
Characteristics of stays:

24.7% of stays in University hospitals
85.4% with home admission, in which 54.4% through emergency department
81% ICU-stay

Incidence of septic shock/ Baseline characteristics

Age(Year)	2009	2010	2011	2012	2013	2014	pvalue
	68[56; 78]	68 [57; 78]	68 [57; 79]	69 [57; 79]	69 [58; 79]	69 [58; 79]	↗ p <0.001

Outcomes

	2009	2010	2011	2012	2013	2014	Trend
Length of Stay	19 [8 ; 36]	19 [8 ; 36]	18 [8 ; 35]	18 [8 ; 34]	18 [8 ; 34]	17 [8 ; 33]	↘
Death(%)	41.7%	41.2%	40.5%	40%	39.8%	38.7%	↘
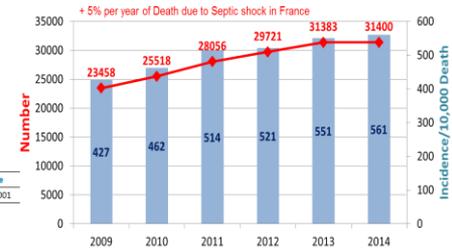
Costs

2009	2010	2011	2012	2013	2014
15,260€	14,580 €	14,024€	14,481€	14,330€	14,156€
[7,905 ; 26,052]	[7,194 ; 25,649]	[6,878 ; 25,094]	[7,439 ; 25,039]	[7,575 ; 24,505]	[7,577 ; 24,153]

Discussion

- Incidence of 136/100 000 inhabitants/year; with an ↗ of 5% per year because of population ageing, malignancy, over rating of diagnostics and procedures
- ↗ of death due to septic shock over time;
- Lethality of ≈ 40% per year; tends to ↘ of 0.5% per year because improved practices, or over-rating of less severe patients?
- ↘ of costs and length of stay;
- Strength: direct interpretation of the results for France
- Limits: administrative database

Conclusion

- Septic shock remains a severe disease.
- Reduction in lethality perhaps due to improved practices.