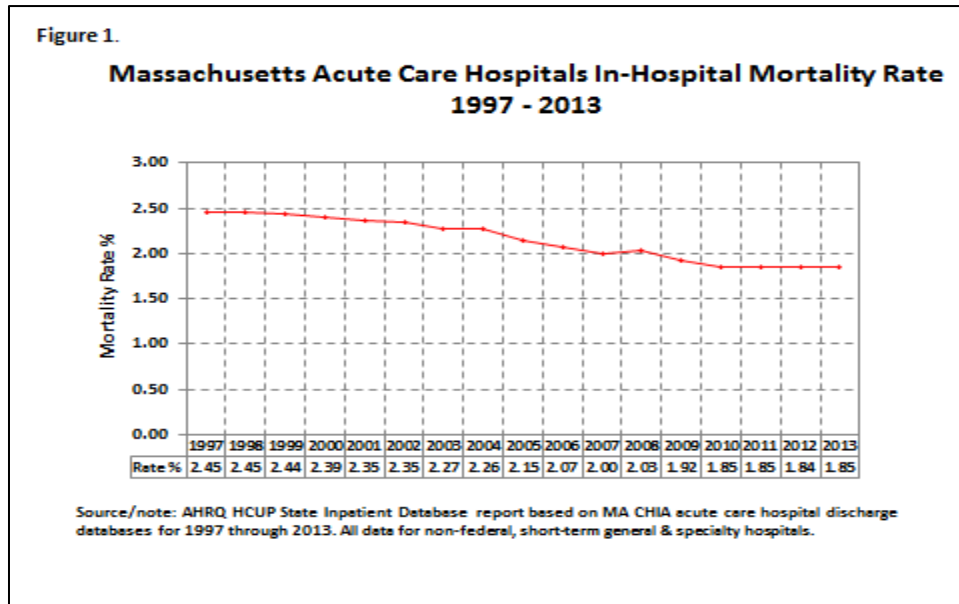


# Massachusetts Hospitals Statewide Performance Improvement Agenda Report

## Quality of Care Commitment: Reduce Preventable Mortality



The rate of **in-hospital mortality** in Massachusetts acute care hospitals declined steadily from 2.45 percent in 1997 to 1.85 percent in 2010, and then stabilized at essentially the same rate through 2013 (Figure 1). This measure has both merits and limitations in monitoring progress in reducing preventable mortality. It is a simple and reliable measure of overall mortality, but it is not specific to preventable deaths and it does not account for changes in patient variables affecting risk of death from year to year. There is also a lag in the availability of the data; complete data typically is not available for eight to ten months following the close of a year (fiscal years ending in September). The measure can also be affected by changing patterns in the site of patient deaths that could be affected by, for example, the availability of hospice services or shorter lengths of stay followed by discharge to various post-acute care sites<sup>1</sup>.

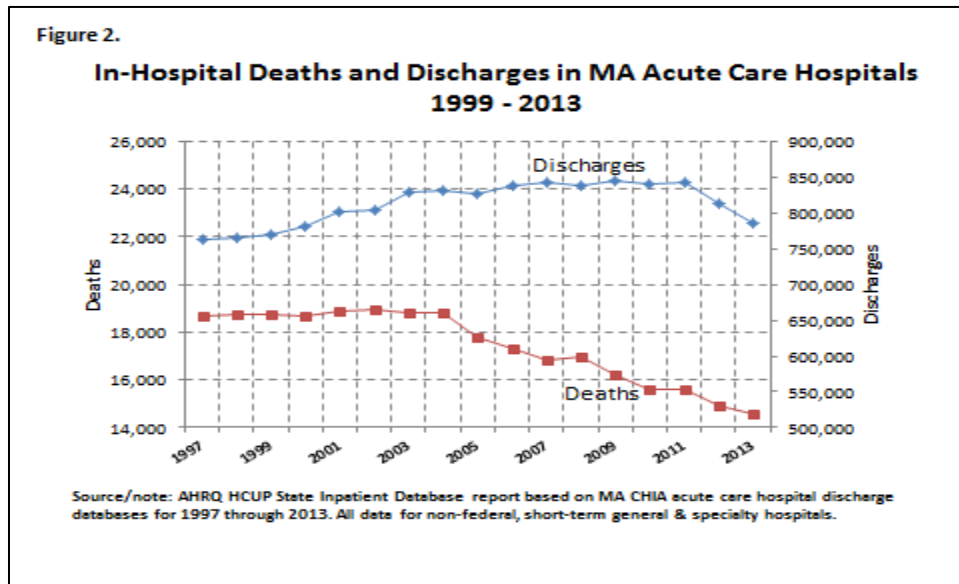


Figure 2 breaks the in-hospital mortality rate into its component parts; discharges and deaths. While discharges increased by about 21,990 from 1997 to 2013 (up 2.9 percent), the number of deaths dropped by almost 4,160 (down 22.2%).

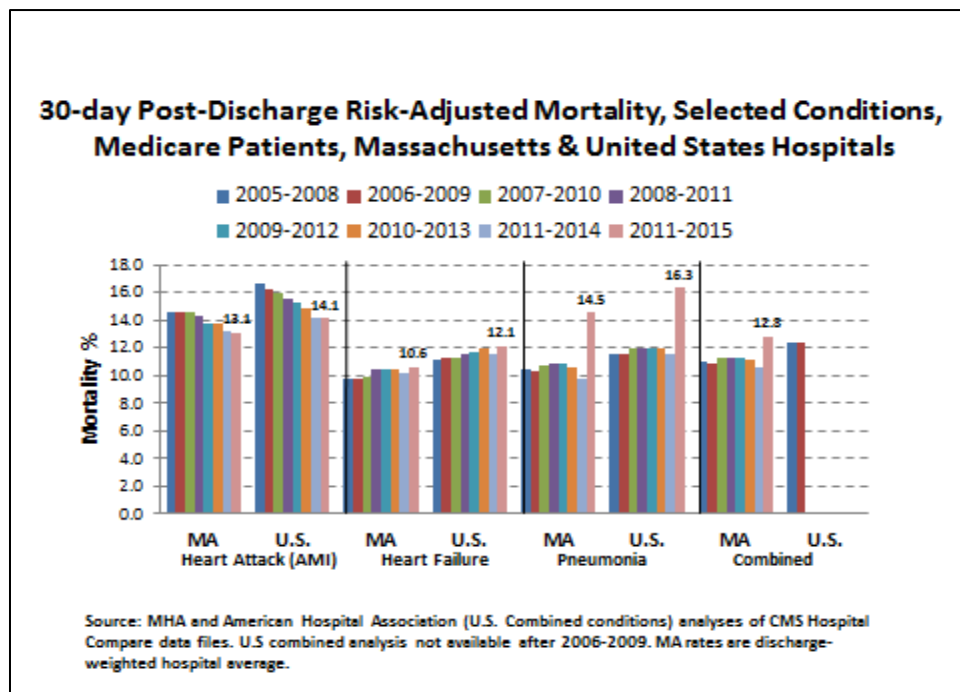


Figure 3 displays the Massachusetts and United States aggregate data over seven three-year periods for estimates of hospital-specific, **risk-standardized, all-cause 30-day mortality rates for Medicare patients hospitalized with a principal diagnosis of heart attack, heart failure, and pneumonia**. All-cause mortality is defined as death from any cause within 30 days after discharge, regardless of whether the patient died while still in the hospital or after discharge. For each condition, the risk-standardized (or "risk-adjusted") hospital mortality rates are estimated from Medicare claims and enrollment data using sophisticated statistical modeling techniques that adjust for patient-level risk factors and account for the clustering of patients within hospitals. The data are updated annually and published at the Hospital Compare website.

For each condition, Massachusetts hospitals in aggregate had lower mortality rates than the United States as a whole. Massachusetts heart attack mortality rates declined over the seven periods (- 9.7%). Heart failure mortality rates increased (9.3%). Pneumonia mortality rates had declined slightly through 2014 (-3.6%), but a change in the measure specification in 2015 prevents comparison with prior periods. The pneumonia measure specification change also prevents comparison of the current combined rates for the three conditions with prior periods.

The Medicare mortality rate data will be updated again in the summer of 2017. The appendix that follows displays mortality rate data for MA and U.S. hospitals for these and other recently introduced measures.

<sup>i</sup> The average length-of-stay (ALOS) in Massachusetts acute care hospitals dropped from 4.9 days in 1998 when mortality rates began their decline, to 4.6 days in 2009. Between 1998 and 2008, ALOS ranged between 4.9 and 4.7 days, and stood at 4.8 days as recently as 2008. The percentage decline in mortality rates was 21.2 % while ALOS dropped 6.1% from 1998 to 2009. Source: MA DHCfp HSD05\_2009\_Hospital\_Utilization file. ([http://www.mass.gov/Eeohhs2/docs/dhcfp/r/hsudf/09/HSD05\\_2009\\_Hospital\\_Utilization.xls](http://www.mass.gov/Eeohhs2/docs/dhcfp/r/hsudf/09/HSD05_2009_Hospital_Utilization.xls)).

APPENDIX

Massachusetts								
Medicare 30-Day Risk Standardized Mortality Rate								
Patient Weighted Average								
Condition	JUL'05-JUN'08	JUL'06-JUN'09	JUL'07-JUN'10	JUL'08-JUN'11	JUL'09-JUN'12	JUL '10-JUN '13	JUL '11-JUN '14	JUL '12-JUN'15
<b>Heart Attack</b>	14.5	14.5	14.6	14.3	13.8	13.7	13.2	13.1
% change vs. prior period	NA	0.0	0.7	-2.1	-3.5	-0.7	-3.6	-0.8
<b>Heart Failure</b>	9.7	9.7	9.9	10.4	10.5	10.5	10.1	10.6
% change vs. prior period	NA	0.0	2.1	5.1	1.0	0.0	-3.8	5.0
<b>Pneumonia</b>	10.5	10.3	10.7	10.9	10.9	10.6	9.8	14.5
% change vs. prior period	NA	-1.9	3.9	1.9	0.0	-2.8	-7.5	48.0
<b>Combined</b>	11.0	10.9	11.2	11.3	11.3	11.1	10.6	12.8
% change vs. prior period	NA	-0.9	2.8	0.9	0.0	-1.8	-4.5	20.8
<b>CABG</b>	NR	NR	NR	NR	NR	NR	2.6	2.7
% change vs. prior period	NA	NA	NA	NA	NA	NA	NA	3.8
<b>COPD</b>	NR	NR	NR	NR	NR	6.8	6.7	6.9
% change vs. prior period	NA	NA	NA	NA	NA	NA	-1.5	3.0
<b>Stroke</b>	NR	NR	NR	NR	NR	14.3	13.8	13.9
% change vs. prior period	NA	NA	NA	NA	NA	NA	-3.5	0.7

United States								
Medicare 30-Day Risk-Standardized Mortality Rate								
Condition	JUL'05-JUN'08	JUL'06-JUN'09	JUL'07-JUN'10	JUL'08-JUN'11	JUL'09-JUN'12	JUL '10-JUN '13	JUL '11-JUN '14	JUL '12-JUN'15
<b>Heart Attack</b>	16.6	16.2	15.9	15.5	15.2	14.9	14.2	14.1
% change vs. prior period	NA	-2.4	-1.9	-2.5	-1.9	-2.0	-4.7	-0.7
<b>Heart Failure</b>	11.1	11.2	11.3	11.6	11.7	11.9	11.6	12.1
% change vs. prior period	NA	0.9	0.9	2.7	0.9	1.7	-2.5	4.3
<b>Pneumonia</b>	11.5	11.6	11.9	12.0	11.9	11.9	11.5	16.3
% change vs. prior period	NA	0.9	2.6	0.8	-0.8	0.0	-3.4	41.7
<b>Combined</b>	21.2	21.4	NA	NA	NA	NA	NA	NA
% change vs. prior period	NA	0.9	NA	NA	NA	NA	NA	NA
<b>CABG</b>	NR	NR	NR	NR	NR	NR	2.6	3.2
% change vs. prior period	NA	NA	NA	NA	NA	NA	NA	23.1
<b>COPD</b>	NR	NR	NR	NR	NR	7.8	7.7	8.0
% change vs. prior period	NA	NA	NA	NA	NA	NA	-1.3	3.9
<b>Stroke</b>	NR	NR	NR	NR	NR	15.3	14.8	14.9
% change vs. prior period	NA	NA	NA	NA	NA	NA	-3.3	0.7

Sources: MHA analysis of CMS 30-day mortality rate data; U.S. data from CMS Hospital Compare data file for same periods; U.S. Combined AMI/HF/PM from AHA analyses in AHA RPB SPIA report and AHA Strategic Plan 2011-2013 p.6 and note 4

Note: The pneumonia definition and measure specification changed with the 2015 release, preventing comparisons to prior periods