

Supplement Table 1: Events potentially associated with excess hospitalizations observed in the period from week 26 of 1998 to week 27 of 2010 in Portugal

Event	Period (week/year)	Number of weeks
1998-1999 influenza epidemic	52/1998 to 9/1999	11
1999-2000 influenza epidemic	1 to 8/2000	8
2000-2001 influenza epidemic	3 to 6/2001	4
2001-2002 influenza epidemic	1 to 11/2002	11
2002-2003 influenza epidemic	48/2002 to 01/2003	6
2003 heat wave	25 to 26 and 31 to 35/2003	7
2003-2004 influenza epidemic	44/2003 to 1/2004	10
2004/2005 influenza epidemic	53/2004 to 11/2005	12
2006-2007 influenza epidemic	3 to 9/2007	7
2007 heat wave	30 to 32/2007	3
2007-2008 influenza epidemic	3 to 8/2008	6
2008 heat wave	29 to 30/2008	2
2008-2009 influenza epidemic	50/2008 to 4/2009	7
2009 pandemic	22 to 37/2009	16
2009-2010 influenza epidemic	44 to 52/2009	9
2010 heat wave	27 to 33 and 35 to 38/2010	11
2010-2011 influenza epidemic	50/2010 to 6/2011	9
2011 heat wave	25 to 26, and 30 to 34/2011	7
2011-2012 influenza epidemic	4 to 13/2012	10
2012 heat wave	26 to 27, 29 to 30 and 32 to 33/2012	6
2012-2013 influenza epidemic	4 to 13/2013	10
2013 heat wave	26 to 29 and 32 to 39/2013	12
2013-2014 influenza epidemic	3 to 9/2014	7
2014 heat wave	24 to 25/2014	2
2014-2015 influenza epidemic	1 to 10/2015	10
2015 heat wave	25 to 26/2015	2

Supplement Table 2. Seasonal ARIMA best-fitted models by R package forecast and Box-Ljung test for residuals auto correlation

Age groups	Model	Box-Ljung test for auto-correlation of residuals
Overall	ARIMA(2,1,1)(2,0,2)[52]	X = 1.7901, df = 6.789, p = 0.9654
<2	ARIMA(2,1,2)(2,0,2)[52]	X = 14.4699, df= 6.789, p = 0.03886
2-4	ARIMA(1,1,1)(1,0,1)[52]	X = 15.736, df= 6.789, p = 0.02455
5-14	ARIMA(3,1,1)(2,0,2)[52] with drift	X = 10.8705, df= 6.789, p = 0.1323
15-49	ARIMA(2,1,2)(0,0,2)[52]	X = 11.9567, df= 6.789, p = 0.09275
50-64	ARIMA(1,1,3)(0,0,2)[52]	X = 15.3473, df= 6.789, p = 0.02830
>= 65	ARIMA(2,1,2)(2,0,2)[52] with drift	X = 22.864, df= 6.789, p = 0.001545