

Has the UK had a double epidemic?

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Introduction

Outbreaks of a new type of epidemic, possibly due to immune manipulation, can be traced back to the 1950's in the UK using monthly deaths. There is similar evidence in the USA for total health care costs although data is only available since the 1960's. These outbreaks usually occur twice every decade, however, in the 1990's there was a three in a row series in 1993, 1996 and 1999. This series led to such dramatic increases in medical emergency admissions that numerous studies were initiated. Unfortunately these studies concluded that social and structural factors in the health services were to blame.

The latest of these epidemics occurred in 2012, however, a survey of recent NHS data reveals that there may have been a double outbreak. All data is from the Health & Social Care information Centre website (August 2014 data adjusted for known undercounting), except for Fig. 2 which uses SITREPS.

Emergency Admissions

Figure 1: Running 12 month total of emergency admissions, England

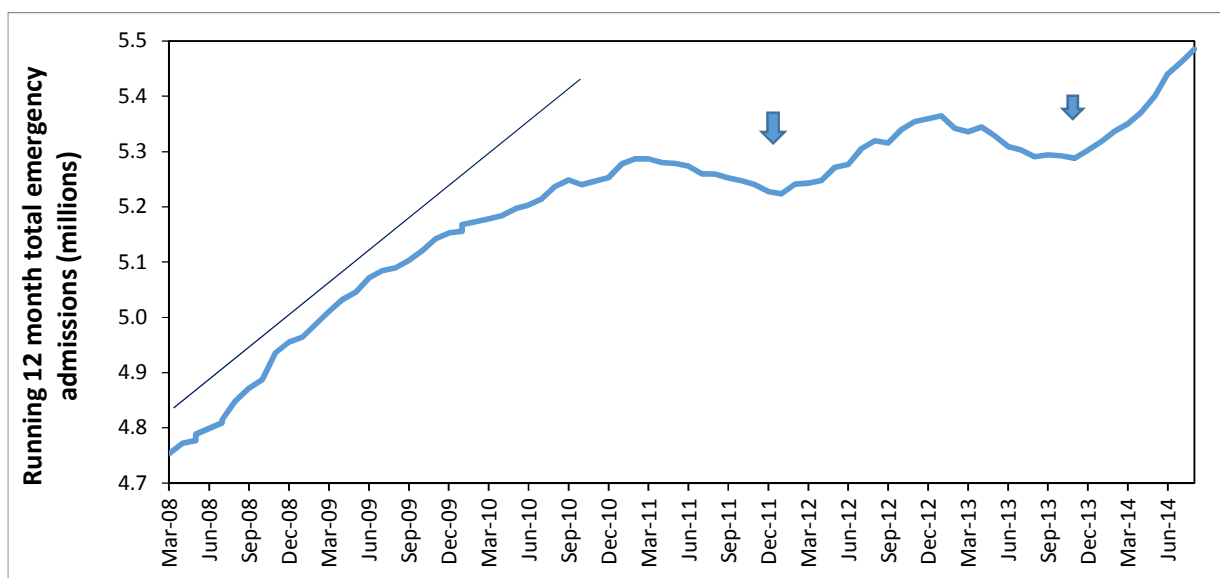


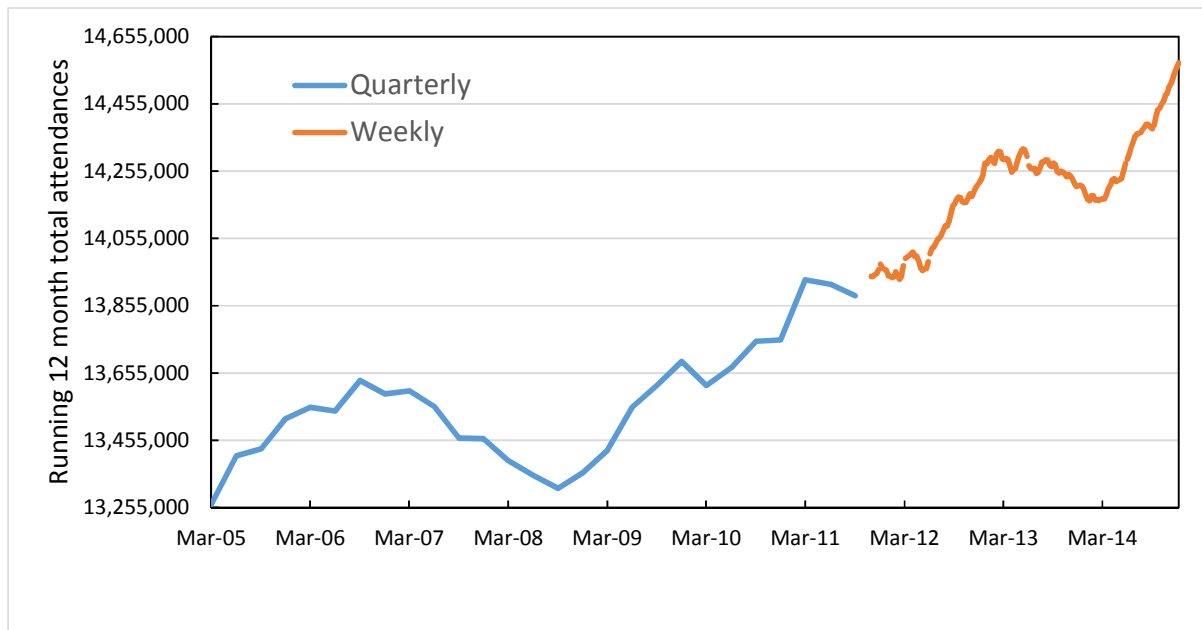
Figure 1 shows a running 12 month total for Emergency admissions in England. In a running 12 month total chart the start of the epidemic is at the foot of a ramp upward. The arrows indicate the likely start points for the 2012 and following epidemic. The 2008 outbreak can also be clearly seen. The size of this outbreak was exaggerated due to counting issues arising from the arbitrary 4 hour waiting time target in the Accident & Emergency (A&E) department and otherwise A&E attendances were 'admitted' into assessment units. The expansion in the capacity of assessment units peaks around 2010, hence, this effect is not seen beyond that point. After the outbreak the level of emergency admissions tails off and can even start to decline.

In addition, for as yet unknown reasons, each outbreak has a variable effect upon different aspects of care. For example, the 2008 outbreak had a very large impact on GP referral for an outpatient appointment which was far greater than observed in the 2012 outbreak, etc.

Accident and Emergency (A&E) attendances

The A&E department appears to be disproportionately affected by these outbreaks. Figure 2 gives a time series using a running 12 month total using SITREPS data for attendance at acute hospital-based A&E units. The first peak arises from the tail-end of the 2003 outbreak, then a rise from the 2008 outbreak, then the 2012 outbreak (which, for unknown reasons, appears to only endure for one year before abating) and finally the 2014 outbreak.

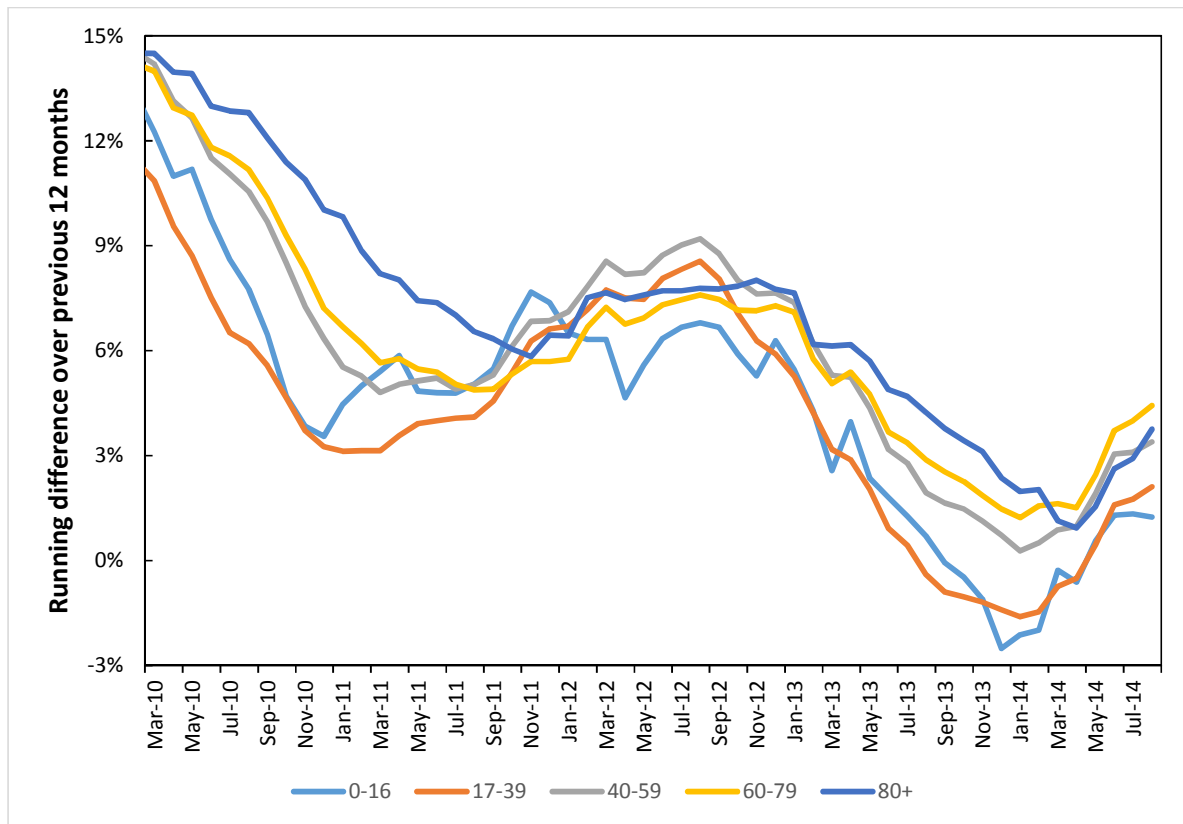
Figure 2: Attendance at Type 1 A&E departments (acute hospitals) in England



SITREPS data is from: <http://www.england.nhs.uk/statistics/statistical-work-areas/ae-waiting-times-and-activity/weekly-ae-sitreps-2014-15/>

The issue regarding age is explored in Figure 3 uses a running difference relative to the previous 12 months, i.e. running sum ending April 2012 versus running sum ending April 2011, etc. This method allows differences in timing and extent of the effect against different age groups to be revealed. Data in this figure is for attendances at all types of A&E (including minor injury units).

Figure 3: Running difference between successive 12 month totals for A&E attendances, by age group, England



As can be seen the younger age groups appear to be affected first. However, due to the fact that the conversion rate from A&E to inpatient rises steadily with age it is the older age groups which have the highest effect on inpatient admissions.

These age-specific effects appear to account for the seeming differences in the apparent start date seen between the different charts, i.e. the start date is influenced by the age group having the largest number of admissions/attendances

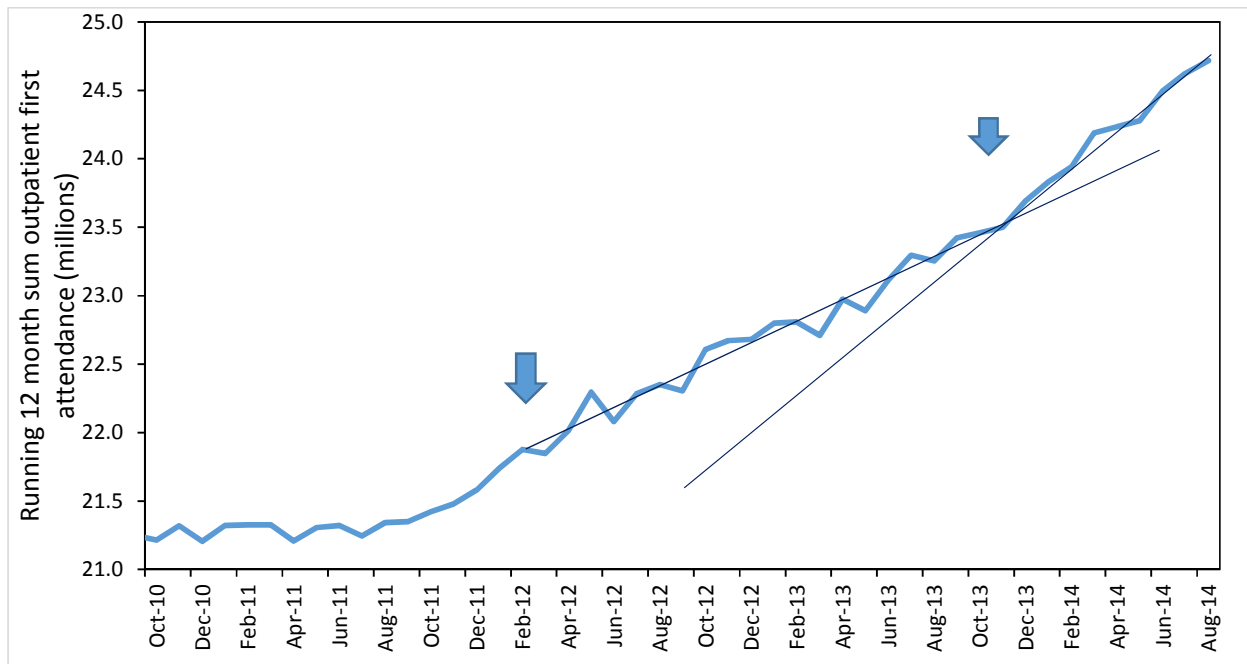
This effect upon persons of working age will be explored in greater detail in the last section which looks at the effect on NHS staff sickness rates.

GP referral and outpatient first attendance

These epidemics have far wider effects than acute inpatient care and GP referral for a Consultant opinion commonly also increases. Figure 3 shows the corresponding effect on GP referral for a first outpatient attendance. Two break points can be likewise seen. The very large effect on first attendance arising from the 2008 outbreak has been omitted from this chart.

At first appearance the 2014 outbreak appears to have had a larger effect than the 2012 outbreak.

Figure 4: Running 12 month total outpatient first attendance, England



Sickness Absence Rates

Since these are genuine infectious events, an effect on NHS staff sickness absence rates would also be expected to occur and Figure 4 confirms that this has indeed happened.

Figure 5: Sickness absence rates for NHS staff, England

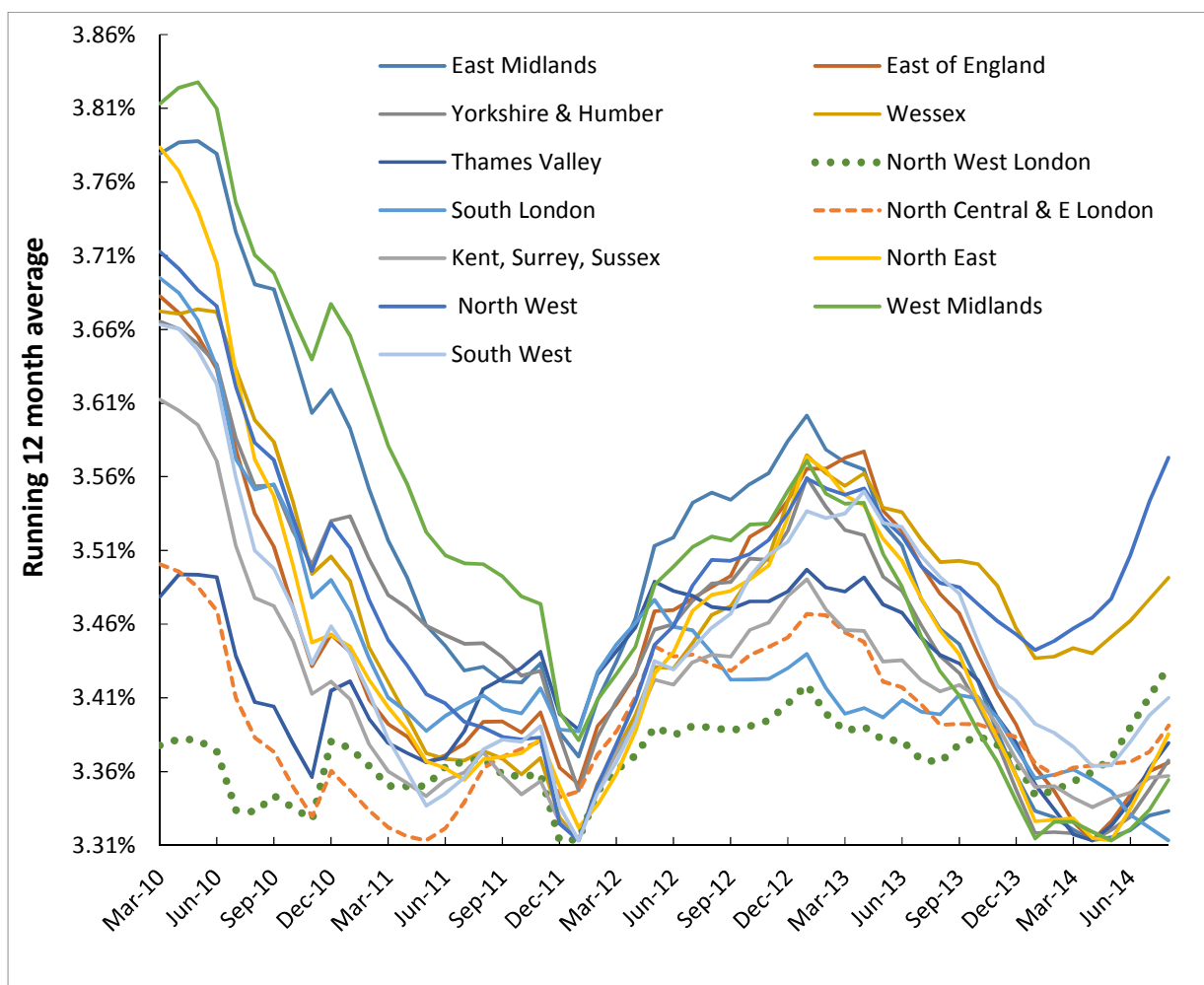


As can be appreciated NHS staff are adults below retirement age (the average age of NHS staff is 43), and this demonstrates the far wider effects of these epidemics against general sickness, which will not usually result in hospital admission, but will almost certainly lead to increasing demand for GP appointments. Multiply this many fold across the entire population and the pressure on GP appointments can now be fully appreciated.

Regional variation

Finally, Figure 6 explores regional variation in staff absence rate. All regions have been adjusted to have the same minimum absence rate in the running 12 month chart, adjusted down to the level in North Central & East London.

Figure 6: Sickness absence rates for NHS staff, by region



Firstly, note the wide variation in the effect of the swine flu epidemic with maximum effect in West Midlands through to little effect in NW London. This confirms wide variation in deaths observed using monthly data at Local Authority level. Maximum 12 month change following the 2012 outbreak ranges from +7.1% increase in Wessex down to +2.5% in South London. Then note the difference in response to the 2014 outbreak with the North West showing the strongest response.

Conclusion

From the above charts it looks like the UK has just had a double outbreak, which from a capacity and cost perspective is very grave news. However, regional variation is likely to be high as was observed following the swine flu and 2012 epidemics.

All supporting studies can be found at:

<http://www.hcaf.biz/emergencyadmissions.html>