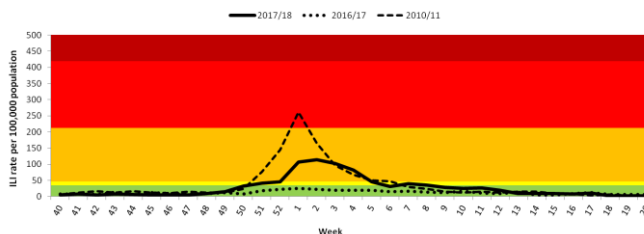


Flu epidemiology in Scotland – season 2017/18

Moderate activity levels of influenza activity were seen in primary care

GP consultation rates for ILL in Scotland
(weekly rates per 100,000 population)



All ages	baseline activity	low activity	moderate activity	high activity	very high activity
2017/18	< 34.53	34.53 to <45.92	45.92 to <212.73	212.73 to <418.92	>418.92

Data courtesy of Health Protection Scotland

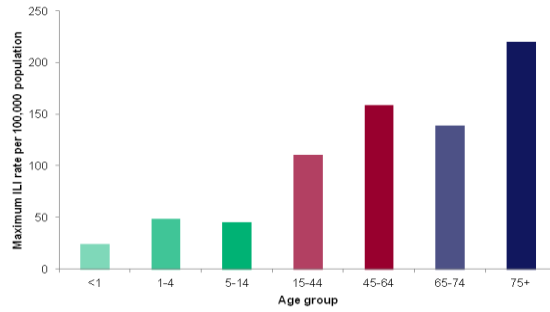
The impact of flu on the population varies from year to year and is influenced by changes in the virus that, in turn, influence the proportion of the population that may be susceptible to infection and the severity of the illness.

The graph shows the rate of influenza/influenza-like illness episodes in Scotland per 100,000 consultations in primary care for 2010/11 flu season, **2016/17 season and 2017/18 season**. The data show that flu viruses circulate each winter season, but the degree of activity varies substantially.

In the 2017 to 2018 season, moderate to high levels of influenza activity were observed in the UK with co-circulation of influenza B and influenza A(H3). The impact of this co-circulation was predominantly seen in older adults, with a consistent pattern of outbreaks in care homes noted. In addition, very high impact in terms of laboratory confirmed influenza hospital and ICU/HDU admissions particularly amongst older adults were observed, although peak activity in general practice was variable (moderate in England, Scotland and Northern Ireland and high in Wales). Peak admissions rates of influenza to hospital and ICU were higher than seen in the previous 6 seasons. Levels of excess all-cause mortality were elevated particularly in the elderly, higher than in 2014 to 2015.

Flu epidemiology in Scotland – season 2017/18

- biggest impact in older adults, consistent with pattern of large number of outbreaks and excess all-cause mortality seen particularly in the 65+ year olds



Data Health Protection Scotland

Flu epidemiology in Scotland – season 2017/18

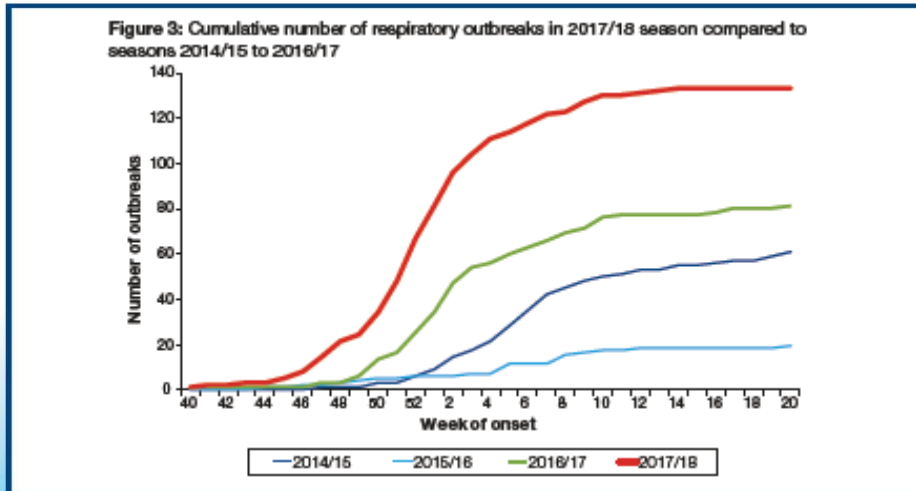
- early season was dominated by circulation of influenza A H3N2 (~70%) followed by a late influenza B wave (~30%)
- highest number of ARI outbreaks ever recorded and number of laboratory confirmed cases requiring intensive care management (SARI) was high and similar to 2010/11

Data courtesy of Health protection Scotland

Acute Respiratory Illness (ARI) outbreaks: are defined as two or more cases (in an institution with onset within 7 days of each other) of acute respiratory infections (whether virologically confirmed or not).

Severe Acute Respiratory Illness (SARI): In Scotland, an influenza SARI case is defined as an individual with laboratory confirmed influenza requiring intensive care management.

Flu morbidity in Scotland



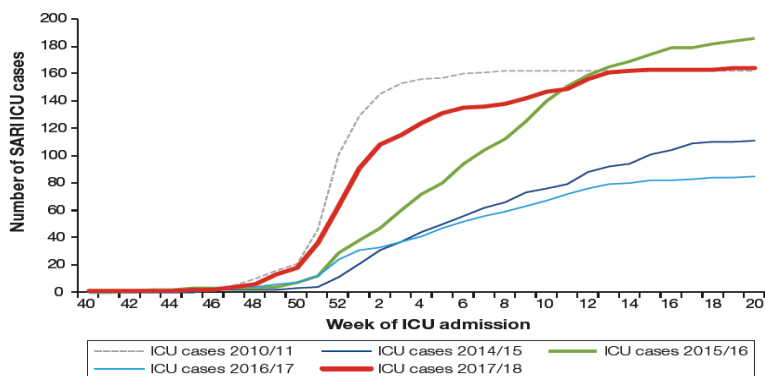
Data courtesy of Health protection Scotland

Acute Respiratory Illness (ARI) outbreaks: are defined as two or more cases (in an institution with onset within 7 days of each other) of acute respiratory infections (whether virologically confirmed or not).

In 2017/18 we have observed an earlier increase and higher number of ARI outbreaks reported to HPS than in previous seasons.

Flu morbidity in Scotland

Figure 5: Cumulative number of influenza cases with severe infection requiring intensive care management by week of hospital admission, week 40 2017 to week 20 2018, compared to previous seasons



Data courtesy of Health Protection Scotland

Severe Acute Respiratory Illness (SARI): In Scotland, an influenza SARI case is defined as an individual with laboratory confirmed influenza requiring intensive care management.

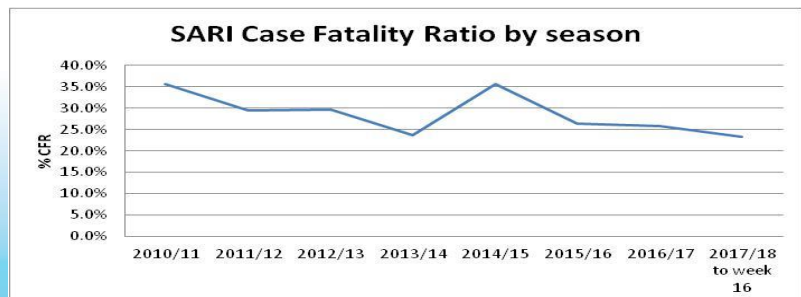
In 2017/18, the cumulative total of cases was higher than the total at the same period for the previous season but lower than season 2015/16.

Influenza Associated Mortality – all cases in Scotland



Summary table of statistically significant excess in all-cause mortality using EuroMOMO method:

EuroMOMO scoring	Weeks
Small excess	49, 50, 51, 4
High excess	3
Very high excess	52, 1, 2



Data courtesy of Health Protection Scotland

All-cause mortality:

Information on mortality from all causes is provided for management purpose from the General Registrar's Office for Scotland (now part of National Records of Scotland (NRS)). Excess mortality is defined as a statistically significant increase in the number of deaths reported over the expected number for a given point in time. This calculation allows for a weekly variation in the number of deaths registered and takes account of deaths registered retrospectively. Information is used to provide an early warning to the NHS of any seasonal increases in mortality to allow further investigation of excess detections.

There is no single cause of 'additional' deaths in the winter months but they are often attributed in part to cold weather (e.g. directly from falls, fractures, road traffic accidents), through worsening of chronic medical conditions, e.g. heart and respiratory complaints and through respiratory infections including influenza.

No statistically significant all cause mortality excess was observed between week 5 and week 20. A very high statistically significant excess was observed in weeks 52, 1

and 2 and a high statistically significant excess was observed in week 3. The contribution of flu to the excess all cause mortality cannot be determined at present but will be the subject of further investigation.

Using the scoring categories agreed with EuroMOMO, a small statistically significant excess is synonymous with the EuroMOMO "above expected mortality" category i.e. a Z-score of 3-5. EuroMOMO scoring categories are defined as below:

- No excess in all-cause mortality is defined as a Z-score of less than 3
- Above expected excess all-cause mortality is defined as a Z-score between 3-5
- High excess all-cause mortality is defined as a Z-score of 5-7
- Very high excess all-cause mortality is defined as a Z-score of greater than 7

SARI mortality:

In Scotland, a SARI case is defined as an individual with laboratory confirmed influenza requiring intensive care management. SARI case fatality ratio (CFR) is the number of deaths among all SARI cases. In 2017/18, SARI CFR was at the lower end of the expected seasonal range (the case-fatality rate has ranged from 23.7% in season 2013/14 to 35.6% in seasons 2010/11 and 2014/15).