

**Communicable Disease Surveillance Centre (NI)  
Dept. of General Practice, QUB, Data Retrieval Project  
Regional Virus Laboratory**

**Enhanced Surveillance of Influenza  
in Northern Ireland**

**Summary  
Season 2003-2004**

**This summary is circulated to Trust Chief Executives, Directors of Public Health, Consultants in Communicable Disease Control, participating practices and other interested parties. We would encourage you to disseminate it internally to any relevant personnel. For further information or any comments on the contents or presentation of this document, please contact Dr Hilary Kennedy at 028 9026 3765 or E-mail at <mailto:hilary.kennedy@hpa.org.uk>**

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- ◆ *Influenza activity in Northern Ireland commenced in the first week of October 2003 - several months earlier than would, normally, be expected*
- ◆ *Infection was caused by the Fujian strain of influenza A H3N2*
- ◆ *The Fujian strain predominated across the UK, Ireland and Europe during 2003/04*
- ◆ *Rates of illness were highest in children under 4 years of age*

## **Enhanced Surveillance of Influenza in Northern Ireland**

### ***Introduction***

This bulletin is produced as part of the enhanced surveillance of influenza in Northern Ireland. The principal aim of the project is to provide an early warning scheme for influenza virus circulation in Northern Ireland. The scheme involves the weekly compilation of data from sentinel GP practices and out-of-hours Co-Operatives (Co-Ops).

### ***Sentinel GP Practices***

During last season (2002/03), consultation-based information regarding 'flu and 'flu-like illness was supplied by twenty-four spotter practices across the Province. Prior to the commencement of the current season, 2 practices withdrew from the scheme (due to other commitments) and one new practice joined. This brought to 23 the number of practices taking part during 2003/04, representing 140 757 patients throughout Northern Ireland (approximately 8.3 % of the population). The majority of practices have contributed to the ESINI scheme each year since it began, in October 2000.

### ***Co-Operatives***

Out-of-hours Co-Operatives were, once again, involved in provision of information for the enhanced influenza surveillance scheme. Five Co-Ops, covering approximately 1 236 428 persons (73.2 % of the population), undertook to supply weekly data on numbers of calls received and the age/sex breakdown of those calls. It is hoped that, in due course, it may become possible to identify the proportion of calls each week attributable to 'flu-like illness or upper respiratory tract infection.

The purpose of the scheme is to supplement the surveillance data already available through routine laboratory testing. Many of those who suffer from influenza will self-medicate, or may visit or contact their GP (or nearest Co-Op) if their symptoms are more severe. It is unlikely that samples would be taken from such individuals for laboratory testing. Consequently, most samples which are tested by the laboratory originate from patients who have taken ill, become hospitalised due to an underlying condition such as diabetes or cardiorespiratory disease, or who have developed complications. By the time samples have been taken from such patients for laboratory testing, virus will have been circulating in the community for several weeks. To increase the predictive value of surveillance, it is important that more timely and representative information is retrieved. Such data could be used in the deployment of resources and personnel in primary and secondary healthcare and, in turn, reduce the pressures on associated resources.

## ***Consultation rates***

### ***Sentinel GP Practices***

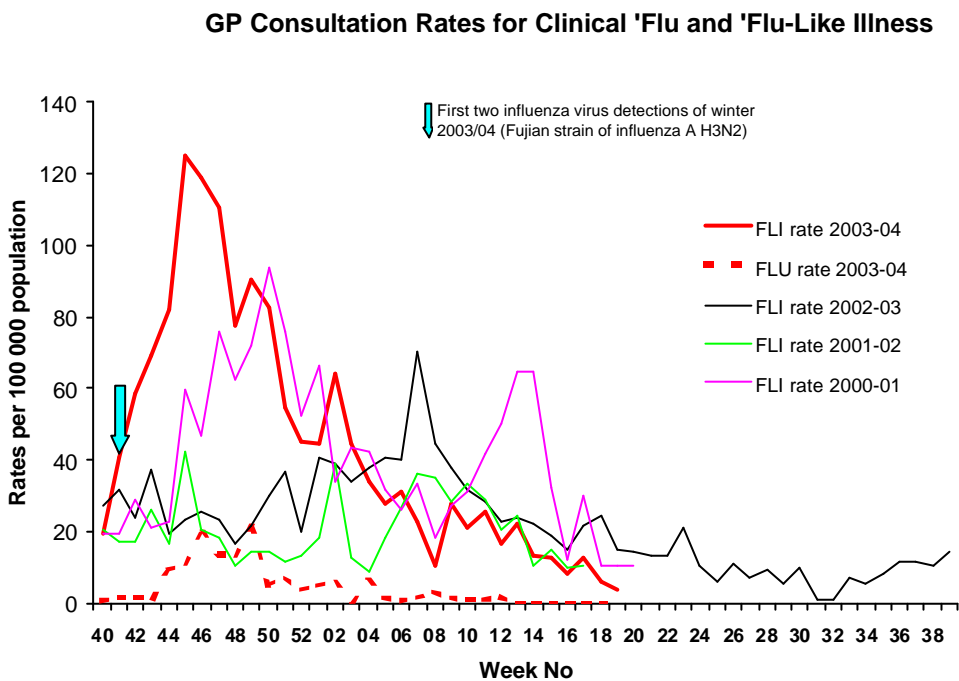
In Spring 2003, China, South East Asia and Canada experienced outbreaks of a new disease – Severe Acute Respiratory Syndrome (SARS). As these outbreaks came under control it was realised that, in order to maximise the possibility of identifying new cases of SARS throughout the world, unexplained respiratory illness (particularly clusters amongst healthcare workers) would need to be investigated quickly and rigorously. For this reason, and in order to begin establishing baselines for ‘flu and ‘flu-like illness in NI, sentinel GPs were requested to continue the provision of consultation data throughout the summer period of 2003 (Week 21 – mid-May through to Week 39 – late September). Almost all sentinel GPs agreed to do so and Figure 1 indicates that, by Week 35 of 2003, consultation rates were beginning to rise steadily – albeit slowly. From Week 40, the rate rose rapidly and, in Week 45 (at 145 per 100 000 population), was higher than that recorded at any time since the ESINI scheme commenced (autumn 2000).

During 2003/04, fifteen GP surgeries agreed to take part in an enhanced study which entailed nasal and throat swabbing of patients presenting with clinical influenza. A total of 169 swabs were submitted to the Regional Virus Laboratory by sentinel GPs between Week 40 of 2003 and Week 20 of 2004.

In Week 41, the first two cases of influenza A H3 were confirmed in the Province – one from a 58 year old (swab submitted by a sentinel GP), the other from a 12 year old hospitalised child. These were further identified, by sequencing, as the Fujian strain of Influenza A H3N2 – the strain that predominated in South Africa and Australia during the Southern Hemisphere winter of 2003. By Week 03 of 2004, GP consultation rates were falling to the levels expected for the time of year and the last influenza A H3N2 infection was confirmed in Week 06 (mid February).

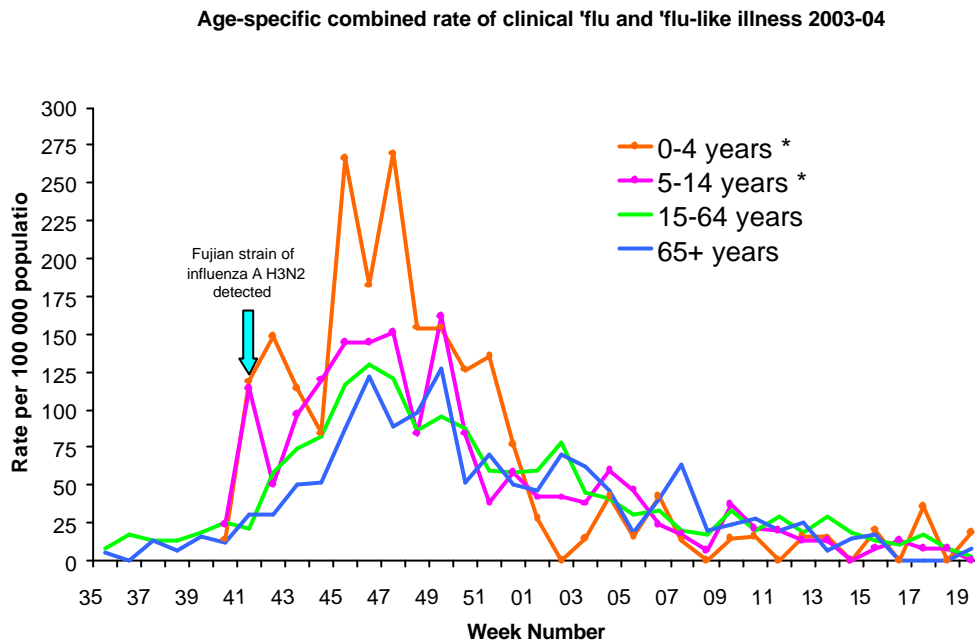
During 2003/04, a total of 39 cases of influenza A H3 infection were laboratory confirmed in patients registered with a sentinel GP practice. Approximately one-third of these were in children under 14 years of age and a further third were in young adults. Sentinel GPs were requested to provide information on the vaccination status of the remaining patients – particularly those aged over 65 years, or those under 65 years in a recognised “at risk” group. Information was received on a number of these patients, indicating that none of those aged under 65 years were in an “at risk” group. Several patients were aged over 65 years and would, as a matter of course, have been offered influenza vaccination. However, these patients had either declined the invitation to receive vaccine or had been vaccinated less than two weeks prior to falling ill. There was, therefore, no evidence for influenza vaccine failure during winter 2003/04.

Figure 1:



Early in the 2003-04 season, it became apparent that children were the group most affected by influenza. In particular, children under 4 years of age. As there had been very little influenza in circulation for a number of years, the potential for developing immunity was restricted and young children were, essentially, a naive population. Figure 2 shows the combined age-specific rate for 'flu and 'flu-like illness in all four age groups.

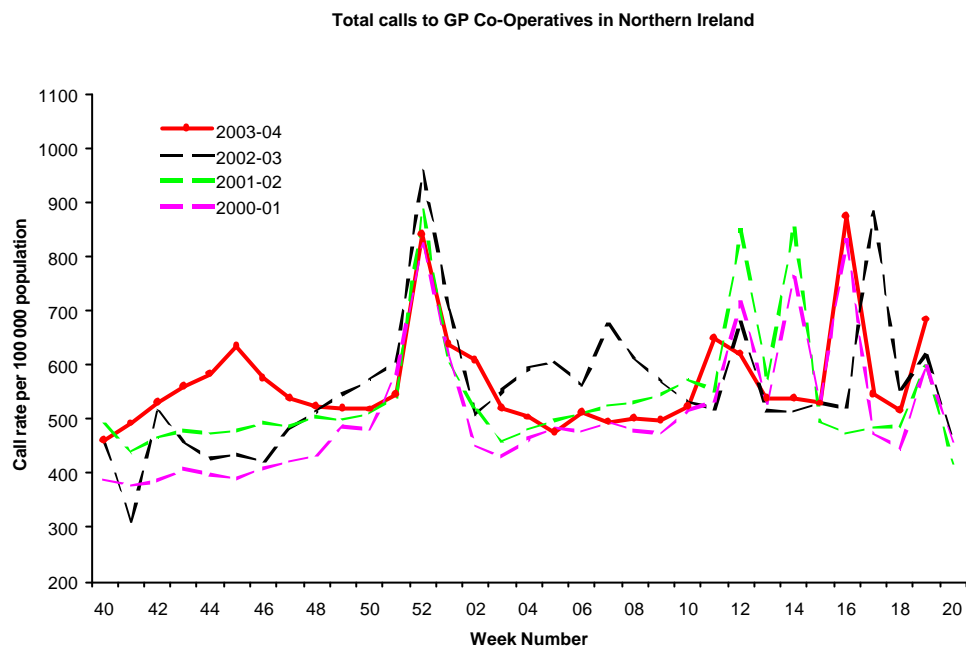
**Figure 2:**



### **Co-Operatives**

For most of the season, Co-Op call rate data for 2003/04 followed a very well-defined pattern throughout the normal period of surveillance, with peaks in call rates occurring during the holiday periods of Christmas/New Year, St Patrick's Day and Easter (Figure 3). The main exception to this yearly pattern occurred early in the season – at the same time as GP consultation rates were rising rapidly. Call rates recorded during the period from Week 40 to Week 48 of 2003/04 were higher than historical data would have predicted. Examination of the raw data also indicates that a higher than normal proportion of calls recorded by Co-Ops during this time related to children aged 0-14, particularly those aged 0-4 years. In the absence of coding, the increased rates recorded during this period cannot be attributed solely to an increase in respiratory disease. However, the Co-Op data does correlate well with the increase in GP consultation rates for clinical 'flu and FLI in those aged 0-14 during the same period.

**Figure 3: Call rates to Co-Operatives in Northern Ireland 2000/01 – 2003/04**



## Virus activity in Northern Ireland

In comparison to the previous three years, influenza virus activity was relatively high in Northern Ireland during the early part of the 2003/04 season. Sequence data on one isolate showed it to be A/Fujian/411/2002 (H3N2)-like – and the sequence to be identical to that of an isolate found in South Africa during the Southern Hemisphere 2003 winter. As described earlier, influenza A H3 infection was confirmed in 39 individuals registered with sentinel GP practices. An additional 77 influenza A H3 infections were confirmed through routine laboratory testing – the majority of which were in hospitalised children. Thirty-six of these 77 cases were babies under 1 year of age and a further 12 cases were aged between 2 and 4 years. Approximately one-third of patients with influenza were also co-infected with one or more of the following respiratory viruses; adenovirus, rhinovirus, parainfluenza virus type 2 and RSV. There were no laboratory reports of influenza B infection during 2003/04.

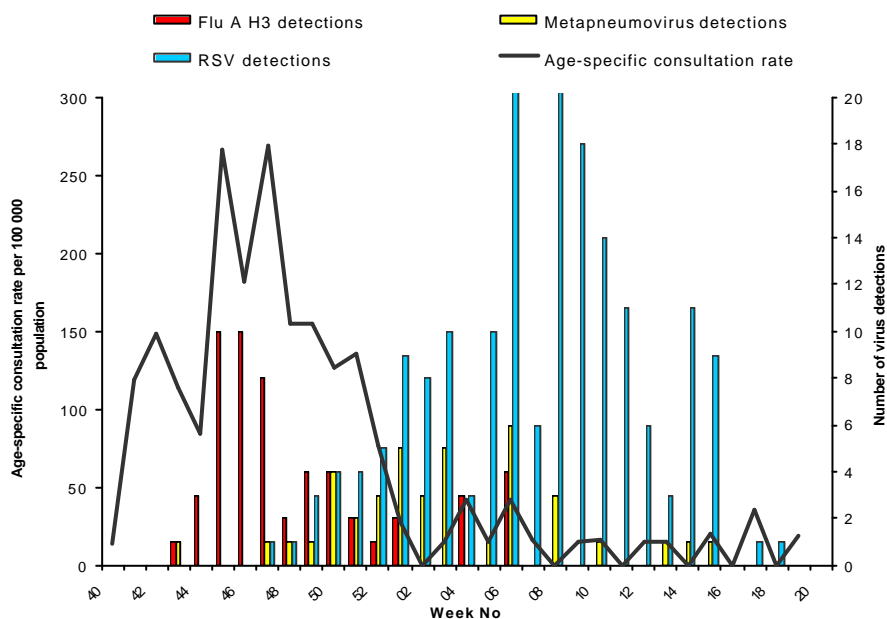
Respiratory virus infections, other than influenza, were also laboratory confirmed in 491 individuals across Northern Ireland during the 2003/04 season. Thirty-four of these were patients registered with a sentinel GP and the majority of the remainder were hospitalised patients – more than 64 % of whom were under 1 year of age. Approximately one-sixth of all patients without influenza had dual or triple infections with other respiratory viruses - most frequently a combination of RSV plus adenovirus and/or rhinovirus. The other main respiratory pathogens detected were parainfluenza virus type 2 and metapneumovirus.

Human metapneumovirus (a paramyxovirus) was first identified in the Netherlands in 2001 and causes symptoms similar to those normally associated with RSV infection. In children, these symptoms can range from upper respiratory tract infection to severe bronchiolitis and pneumonia.

In 2003/04, metapneumovirus was included (for the first time) in the PCR screen for routine respiratory specimens and sentinel GP swabs submitted to the Regional Virus Laboratory. Metapneumovirus (with or without additional respiratory virus infections) was detected in 2 sentinel GP swabs (both aged over 50 years) and in 47 hospitalised patients. Almost 80 % of the hospitalised patients were under 4 years of age.

Not unexpectedly, Figure 4 indicates that the highest GP consultation rates for children aged 0-4 years during the 2003/04 season coincided with the period during which influenza was circulating within the NI community.

**Figure 4: Respiratory infections versus age-specific combined GP consultation rate for 'flu and 'flu-like illness in children aged 0-4 years, 2003/04**

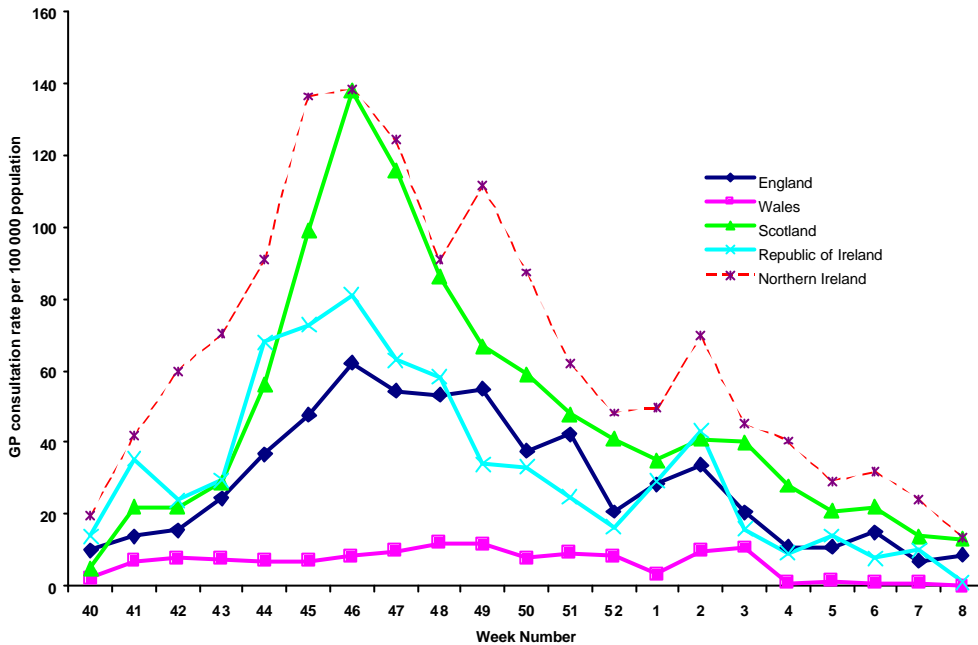


## Flu surveillance elsewhere

### England, Scotland, Wales and Republic of Ireland

In 2003/04, RCGP and sentinel scheme consultation figures across much of the UK and Republic of Ireland followed the same pattern as that seen in Northern Ireland, with Scotland being the most closely related. However, consultation rates in Wales remained at low levels throughout the season.

**Figure 5: GP consultation rates for influenza and ‘flu-like illness UK and Republic of Ireland, 2003/04 \***



\* Data extracted from HPA Weekly National Influenza Report (England, Wales & Scotland) and from National Disease Surveillance Centre Weekly Influenza Surveillance Report (Republic of Ireland)

### Virological Surveillance England, Wales & Scotland

Between Week 40 and Week 08 of the current season, there were a total of 757 PCR positive detections for influenza A H3 (134/757 further typed as H3N2) made from specimens referred to the Enteric Respiratory and Neurological Reference Laboratory (ERNVL) from England, Wales, Scotland and Northern Ireland. Of these, 564 were isolated and 293 were confirmed as influenza A/Fujian/4111/2002 (H3N2)-like. During the same period, other NHS and HPA microbiology laboratories across England detected (by isolation or direct immunofluorescence) a total of 693 influenza A infections and 14 influenza B infections. The corresponding figures for Wales were 109 influenza A detections and no influenza B detections.

### Virological Surveillance Republic of Ireland

Between Week 40 and Week 19 of the current season, a total of 350 sentinel GP swabs were submitted to the National Virus Reference Laboratory (NVRL) for testing. One hundred and forty-nine were found positive for influenza virus. Of these, 136 were typed as influenza A (H3N2), 6 as influenza A (unsubtyped) and 7 as influenza B.

In addition, a further 1821 non-sentinel respiratory specimens (mainly from hospitals and non-sentinel GPs) were tested by the NVRL and, of these, 111 were found positive for influenza virus; 97 for influenza A and 14 for influenza B.

Eight influenza A (H3N2) samples were sequenced at the NVRL and phylogenetic analysis was carried out at Mill Hill. All 8 samples were characterised as A/Fujian/411/2002 (H3N2)-like.

## **Europe**

Influenza activity commenced much earlier than usual in Europe during winter 2003/04 and, as in the UK and Ireland, young children were the group most affected by illness.

The first country to confirm that influenza A (H3N2) was in circulation was the Republic of Ireland - where outbreaks occurred in two schools (Dublin and Co. Kildare) during the first half of September 2003. By the first week of October (Week 41), influenza A H3N2 infection had been confirmed in sentinel GP patients from Northern Ireland, Spain and Portugal and, by Week 42, activity was also being reported across the UK and France. In the weeks that followed, activity continued to spread across Europe – from West to East.

The Fujian strain of influenza A H3N2 predominated across the Europe during 2003/04. Throughout the partner countries of the European Influenza Surveillance Scheme (EISS), a total of 13,040 influenza virus infections were laboratory confirmed between Week 40 and Week 16 of the 2003/04 season. Approximately one-fifth (2,628 isolates) were antigenically and/or genetically characterised and, of these, 96.7 % (2,541 isolates) were A/Fujian/411/2002 (H3N2)-like. Further information may be found on the EISS website <http://www.eiss.org>

**Northern Ireland was admitted to the European Influenza Surveillance Scheme (EISS) as an Associate Member in April 2002. In September 2003, the Province was accepted as a full member of EISS.**

**CDSC (NI) would like to thank all sentinel GPs, their practice staff, Co-Ops and the Regional Virus Laboratory for providing timely data over the past year. Without the co-operation of all concerned, enhanced surveillance of influenza would not be possible.**