Influenza: do we know enough?

An investigation into the impact of influenza on children

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Contents

FOREWORD

A Call To Action

Every year, without fail, influenza strikes. This highly contagious virus infects millions worldwide each year, and everyone – young and old alike – is at risk. For the sufferer, it can lead to serious complications, hospitalisations and even death, and, by overburdening healthcare systems and causing work absenteeism, influenza imposes a significant economic burden on society.

The last global influenza pandemics, in 1957 and 1968, together killed one million people worldwide.[1] The recent severe acute respiratory syndrome (SARS) outbreak killed 774 people[2] and was widely reported, yet all too often the influenza virus is underestimated as a threat to our health and the health of those close to us. The symptoms of influenza are frequently confused with those of the common cold, allowing the virus to spread like wildfire amongst families, schools and entire communities.

Influenza is particularly dangerous for the most vulnerable: the elderly, those with chronic diseases such as asthma and diabetes – and young children and infants, especially babies.

Children of all ages are at risk of infection with influenza, and of developing distressing and painful complications, which can even have an impact on their future health and development. However, as this report demonstrates, the threat to their health is seriously underestimated – with consequences that can be fatal – particularly in infants.

To help to fight influenza, this report brings together, for the first time, vital data on the virus, its impact on children and shows how it can be managed. Key experts from across Europe examine the incidence and effects of the virus, and those who have been affected by influenza tell their story, to highlight its importance.

Until recently, little could be done to protect our children from influenza. However, with the advent of sophisticated surveillance networks, increased vaccination programmes and effective new anti viral treatments, we now have formidable resources at our disposal in the fight against this dangerous virus.

It is no longer acceptable to leave our children at the mercy of influenza. As their guardians, we need to be aware of the serious threat influenza poses to their health. To protect them, we must be able to recognise its symptoms, and to make sure that children who may have the virus are swiftly and effectively diagnosed and treated – to help speed their recovery and to avoid the development of serious complications.

We welcome this report and the call to action it provides. By improving understanding of paediatric influenza, its prevention and the treatments we have at our disposal, we can manage this serious virus and protect our children.

Professor John Oxford
St Barts and The London Queen Mary's School of Medicine and Dentistry, London, UK

Professor Robert Booy
Royal London Hospital, London, UK

CHAPTER 1

Influenza: A Nasty Little Virus

Influenza – commonly called the 'flu' – is a highly contagious viral disease caused by influenza A and B viruses, which affect the upper and lower respiratory tracts and can also cause complications in other parts of the body. During an outbreak, everyone can be affected by the virus – regardless of age, gender or ethnic origin.

Influenza usually occurs in the autumn and winter months in the northern hemisphere (October through to April) and southern hemisphere (April to September) and usually hits in explosive outbreaks that last for six – eight weeks.[3]

Each year, children are three times more likely to be infected with influenza than adults.[3]

Influenza in Children

Infants are particularly vulnerable to influenza infection because their immune systems are not fully developed. The younger the child is, the more vulnerable they are.

As children grow up, they are in close contact with other children and are potentially exposed to the virus in day care, at kindergarten and at school, and are more at risk of developing secondary complications as a result of the illness. On average, one in ten adults are affected annually, compared to one in three children.[3]

Spotting The Symptoms

Influenza can be detected by the sudden onset of fever/chills, a cough, aches and pains in the legs, arms and back, headache and fatigue/weakness, which may persist for up to two – three weeks. In children, additional symptoms include a runny nose (coryza), nausea, vomiting and diarrhoea. However, the symptoms of influenza may vary, depending on the specific virus.

DESCRIPTION	ONSET
Fever/chills	Common; sudden onset
Cough	Usual; severe
Headache	Prominent
Muscle aches and pains	Usual and often severe
Fatigue/weakness	Usual; lasts up to 2–3 weeks
ADDITIONAL SYMPTOMS SPECIFIC TO CHILDREN	
Coryza	
Nausea/vomiting	
Diarrhoea	

A recent survey of physicians in the UK, Germany and France demonstrated that the onset of fever/chills and cough, coupled with the knowledge that a family member or another child at the same school or day care centre had been infected by influenza, were the most important factors in diagnosing a child with the virus.

But It Can Be Difficult In Children Under The Age Of Five Years

Influenza is a common disease of childhood,[4] but for young children, recognition and diagnosis of influenza can be more difficult, because it can be hard for the child to describe their own symptoms.

Paediatric influenza can be also confused with other respiratory infections (e.g. respiratory syncytial virus [RSV]), since the initial symptom of the illness is often a high fever and respiratory symptoms. However, the predominance of wheezing during an RSV infection, which is not a symptom of influenza, may aid diagnosis. It is vital that parents take their child to the physician shortly after the onset of symptoms – within 48 hours – for an accurate diagnosis to be made.

Despite these difficulties in diagnosis, a survey showed that over 90% of front-line physicians treating influenza in children do not use a swab test to identify the virus.[5]

Symptoms rated "very important" by physicians in the diagnosis of influenza in children under five[5]

% of physicians rating "very important"	Fever/chills	Cough	Aches/pains	Fatigue/ weakness	Family member with influenza	Influenza circulating in local community
France	31	51	26	20	63	69
Germany	89	60	49	37	34	17
UK	31	9	17	23	26	11

Influenza Versus The Common Cold

Influenza is often confused with the common cold, but they are in fact quite different. There are clear clinical differences between the two. Whereas influenza onset is sudden with a high and often badly tolerated fever, a cold may develop gradually as a scratchy or sore throat, or increasing congestion in the nose. Other symptoms of the cold include sneezing, cough and in some cases, fever.

Young children can suffer from, on average, six to eight colds per year. However, in the case of the common cold, there is little functional impairment and symptoms are followed by a rapid recovery compared to influenza.

Misdiagnosis means that children with influenza do not receive the right treatment to fight the virus – staying ill for longer, infecting others around them and risking the development of complications.

The Real Threat Of Influenza

Three major worldwide influenza pandemics have crippled the world in the twentieth century, and killed tens of millions of people.

YEAR	PANDEMIC	NUMBER OF DEATHS
1918 – 19	Spanish influenza (H1N1)	30 million deaths worldwide
1957 – 58	Asian influenza (H2N2)	1 million deaths worldwide
1968 – 69	Hong Kong influenza (H3N2)	800,000 deaths worldwide

"Influenza pandemics are deadly. As a conservative estimate for the next pandemic, over one million people could die."

Professor John Oxford
St Barts and The London, Queen Mary's School of Medicine and Dentistry, London, UK

CHAPTER 2

Influenza And Little People

Influenza hits children hard. It is distressing and painful, and can lead to complications, increased hospitalisations and even death.

Prevalence of paediatric influenza[6]*

COUNTRY	CASES OF PAEDIATRIC INFLUENZA
UK	4,000,000 (under 16 in 2000)[a]
France	3,483,129 (under 14 in 2003)[b]
Germany	4,206,300 (under 15 in 2001)[c]
Greece	555,629 (under 14 in 2001)[d]
Norway	303,442 (under 14 in 2003)[e]
Finland	309,003 (under 14 in 2002)[f]
Sweden	297,657 (under 16 in 2002)[g]

*Data based on country populations and clinically reported incidence of influenza

Complications

Influenza is a major cause of respiratory illness in children[7] and can lead to serious secondary complications such as bronchitis and exacerbation of asthma. Otitis media, a painful infection of the ear, is a complication frequently associated with influenza in children,[8] and can cause hearing problems leading to delayed development of speech.

Pneumonia and convulsions are another frequent and extremely distressing complication.[9]

"Influenza-related complications are common among children, and are a serious concern. In some cases they can even be fatal."

Professor Catherine Weil-Olivier
Paediatrician, Hôpital Louis-Mourier, France

COMPLICATION	% OF CHILDREN WITH INFLUENZA WHO MAY DEVELOP THE MOST COMMON COMPLICATIONS[10]
Exacerbation of asthma (5–12 years)	17%
Otitis media (1–12 years)	24%
Bronchitis (1–12 years)	3%
Pneumonia (1–12 years)	3%

The majority of deaths in children with influenza are caused by the secondary complications associated with the virus – it has been estimated that deaths attributable to influenza each year are 8 children per 1,000,000.[4]

"Otitis media is a serious complication of influenza that occurs in up to 40% of young children infected with the virus. It can cause hearing problems leading to delayed development of speech – so it is vital for children to be diagnosed and treated for influenza as soon as possible, to help to prevent the development of this complication."

Assistant Professor Terho Heikkinen,
Department of Pediatrics, Turku University Hospital, Finland

Hospitalisations

Children, whether they have underlying health problems or are otherwise healthy, have an increased risk of hospitalisation because of influenza. Children under the age of four are particularly at risk of being admitted to hospital as a result of influenza-related complications.

Admission to hospital as a result of influenza-related complications has a significant impact, not only on the child, who may be distressed and in pain, but also on their parents, who may have to take time off work to care for them.

COUNTRY	AVERAGE ANNUAL HOSPITALISATIONS DUE TO INFLUENZA COMPLICATIONS IN CHILDREN[11]*
UK	40,000 (under 16 years)
France	34,831 (under 14 years)
Germany	42,063 (under 15 years)
Greece	5,556 (under 14 years)
Norway	3,034 (under 14 years)
Finland	3,090 (under 14 years)
Sweden	2,976 (under 16 years)

*Data based on country populations and clinically reported incidence of influenza-related hospitalisations.

Of those children infected with influenza, more than 1% will require hospitalisation for serious influenza.[9]

Mortality

In the most serious cases, influenza-related complications can kill, and children, with their less developed immune systems and increased incidence of complications, are particularly at risk.

The 2003 SARS outbreak caused panic throughout the world. However, the death rate in children was very low. Influenza-related complications however, kill a significant number of children every year and yet often this goes unrecognised, even by doctors, who remain unaware of the seriousness of these complications.

COUNTRY	PAEDIATRIC INFLUENZA-RELATED DEATHS[12]*
UK	96 (under 16 in 2000)
France	84 (under 14 in 2003)
Germany	100 (under 15 in 2001)
Greece	13 (under 14 in 2001)
Norway	7 (under 14 in 2003)
Finland	7 (under 14 in 2002)
Sweden	7 (under 16 in 2002)

*Data based on country populations and clinically reported influenza-related deaths.

Number of influenza-attributable hospitalisations per 100,000[4]

AGE	NUMBER OF CHILDREN
Less than 6 months	449
6 months to a year	233
1 year to 3 years	79
3 years to 5 years	43
5 years to 15 years	22

CHAPTER 3

The Playground Threat

Children – Influenza 'Spreaders'

Day care centres and classrooms are a high-risk area when influenza is around. The virus can spread quickly from pupil to pupil and amongst teachers, infecting whole classes in days – impacting dramatically on the number of children absent from school.

In children, the virus replicates at higher rates and spreads for longer periods than infection in adults.[13] Given the close proximity of children at kindergarten, in schools and at home in their families, and their less developed personal hygeine, they play a central role in the spread of influenza across a community.

It is estimated that families with children at school are twice as likely to be exposed to influenza than those without children in this age range,[14] since the child may bring the virus home from school and infect their family for days before their symptoms develop. In turn, parents may then spread the virus to colleagues in the workplace, or on to other high-risk individuals, for example grandparents.

A study has shown that 36% of households with a child infected with influenza went on to develop at least one subsequently infected case.[15]

Hit By Influenza: A Family's Story

My family was hit by a classic outbreak of influenza, which had a devastating effect on our daily lives. Catherina, then aged twelve, caught influenza at school, where an outbreak had occurred. Although at first she did not display the symptoms of influenza, the virus was passed on when she came home – within 24 hours influenza had infected almost the whole family. Gerard, our 15-month old baby was the first to become clearly infected and was followed by Esther, aged 10, who was bedridden as a result of her symptoms. Finally, my wife Gillian was infected and was far too ill to look after the children – I had to take five days off work to look after my family. I was able to take a swab from my family and identified influenza A as the virus responsible for the outbreak.

Professor John Oxford
St Barts and The London, Queen Mary's School of Medicine and Dentistry, London. UK

Empty Classrooms

School absenteeism can have a direct impact on a child's education, since they may be away from school for a considerable period of time – and even longer if they develop a complication. During this absence they will miss lessons and may fall behind their classmates, negatively impacting on their education and development.

A recent study estimated that for every 100 children followed during the 2000-2001 influenza season, there were 63 days of school absence.[16]

The Knock-On Effects

Days off school can also be a problem for parents, since they will often need to take time off from work to care for their child – representing a huge socio-economic burden. A French study revealed that 21% of parents had to take time off work due to their child's influenza.[17]

"Often you need only to count the number of empty seats in a classroom to realise that influenza is circulating in the community. A child's education is important, and many children miss out on valuable school days thanks to influenza and its complications. This could be avoided if the child is taken to their physician as soon as symptoms develop."

Brian Sandford
Secretary, European Association of Teachers

COUNTRY	RATES OF SCHOOL ABSENTEEISM DUE TO INFLUENZA
Italy	In Italy, influenza was associated with an average of 5 days absenteeism from school[18]
Finland	During the 1998 – 1999 season absenteeism in schools were 4.7% and 14.8% in nursery schools[19]

CHAPTER 4

Little People: Big Problem

In addition to the suffering influenza causes for the individual child, it is also responsible for a tremendous cost burden – both to healthcare systems and to society. It creates substantial demands on healthcare resources and escalates costs due to increases in primary care consultations, referrals, hospitalisations, clinical complications and drug treatments It also imposes an economic burden on society due to their parents' influenza-related absences from work.

In the 2001/2002 influenza season, the Health Protection Agency (HPA) in the UK reported that consultation rates were highest among children aged 0–4 years of age – peaking at 643 per 100,000.[20]

Paediatric Influenza Outbreak In A Hospital

Paediatric influenza can lead to a real strain on healthcare systems. An outbreak of paediatric influenza in February and March 2003 in the Stadtkrankenhaus, Worms, Germany, resulted in significant increases in hospitalisations and pressure on healthcare staff. The following admissions were observed:

In the outpatient emergency department:

	Total ambulance admissions	Total influenza cases	Patients proven to have influenza
Weekend 15/16 February	150	14	7
Weekend 22/23 February	197	85	31
Weekend 1/2 March	176	70	17
Weekend 8/9 March	172	37	19

This was a substantial increase from the average admissions of 84 patients per weekend.

In the inpatient department:

From 1 January 2003 to 7 March 2003, 442 patients were admitted, 99 of whom tested positive for influenza.

	Number of cases
Influenza with pneumonia (tested by influenza rapid test)	10
Influenza without pneumonia (tested by influenza rapid test)	54
Influenza with pneumonia (not tested)	3
Influenza without pneumonia (not tested)	32
Total	**99**

Reported by Professor Skopnik
Stadtkrankenhaus, Worms, Germany

"Paediatric influenza places a huge burden on hospitals. This outbreak reiterated the importance of being prepared."

Professor Skopnik

CHAPTER 5

Parents Underestimate Influenza

Influenza has a huge impact both on the children it infects, and those around them. However, despite the undoubted threat the influenza virus poses to children's health, there is confusion and a lack of understanding about the illness amongst their parents.

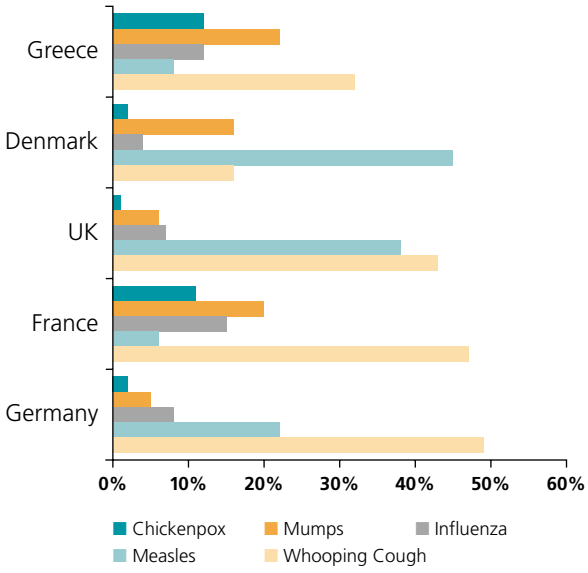
A survey of over 1,700 mothers across Europe revealed that they are confused about the health risks of influenza for their children.[21] As infants and children rely on their parents to take them to the doctor when they are unwell, these statistics are of grave concern.

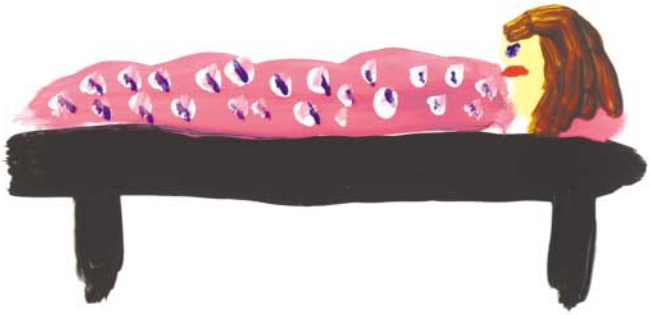
The survey showed that European mothers regard influenza as less of a concern as a childhood illness than whooping cough, measles or mumps.[21]

The survey also demonstrated differences between the attitudes of mothers in different countries; in Denmark particularly, influenza is underestimated as a childhood illness, whilst mothers in France are most concerned about influenza.[21]

Given the serious impact of influenza we have seen, it is important that the virus is given more consideration and takes its place amongst other serious illnesses which pose a threat to childrens' health.

Variation in levels of mothers' concern about childhood illnesses per country[21]





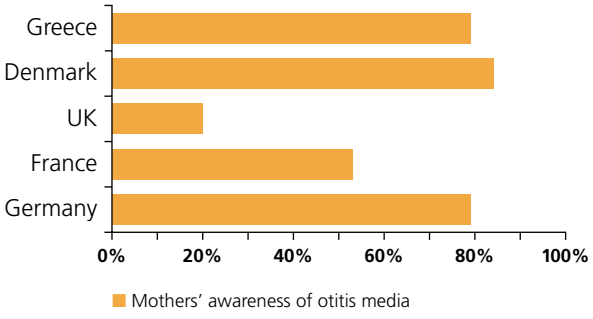
...And Its Potential Complications

Over one third of mothers questioned were not aware that children infected with influenza can develop otitis media, despite the fact that it is extremely painful for the child and can have a negative effect on the development of speech.

There are also significant variations between countries in parents' awareness of the risk of otitis media. In Denmark – where, worryingly, mothers were least concerned about influenza as an illness for children – 84% of mothers questioned stated that they were aware of the complication. In the UK, only 20% of mothers were aware of otitis media and the serious impact it can have on their child.[21]

These results demonstrate serious inconsistencies in knowledge about influenza and the importance which mothers place on the illness. More education is needed to help to highlight the impact of the virus so that parents can more effectively protect their children.

Otitis media awareness rates[21]



CHAPTER 6

Healthcare Practitioners And Influenza

A new survey of healthcare practitioners who regularly treat influenza in children has shown that, in general, the threat of influenza to children's health is recognised, however there are clear differences in opinions amongst clinicians in different countries.[5]

Whilst 71% of paediatricians in France and general practitioners in Germany rated influenza as a serious threat to children's health, only 43% of doctors in the UK shared their concern.[5]

Clinicians in all three countries rated influenza as less important as a childhood illness than asthma, allergies, convulsions and measles, however, they agreed that influenza is more serious for children and infants than chickenpox.[5]

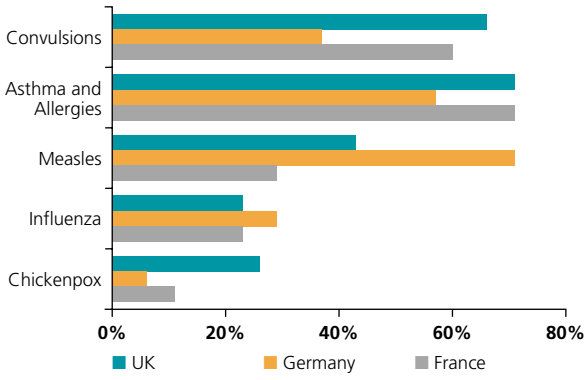
The clinicians interviewed recognised that influenza can cause important complications in children, with otitis media and pneumonia identified as those which most increase in incidence during the influenza season.

- Half of physicians questioned rated influenza's complications as having a "serious" or "very serious" effect on a child's health[5]
- 75% of clinicians questioned stated that, if their own child had influenza, they would like them to receive treatment as soon as possible[5]

Clinicians in Europe recognise overall the significant threat influenza can pose to children's health, however there are important variations across the countries involved. It is vital that awareness of influenza increases, so that clinicians are united in their efforts to diagnose and treat the virus.

"Influenza in children is a serious condition. When secondary complications develop, the child's long term health, development and even life can be at risk. There is no need for children to suffer – parents and physicians need to be prepared to recognise the symptoms of influenza, so that it can be diagnosed and treated swiftly and effectively."

Professor Catherine Weil-Olivier
Paediatrician, Hôpital Louis-Mourier, France



CHAPTER 7

Protecting Our Children

Influenza Surveillance: Forewarned Is Forearmed

The World Health Organisation (WHO) has developed the Global Influenza Surveillance Network, which carefully monitors influenza outbreaks and mutations to help to warn influenza experts, healthcare professionals and the public when influenza is circulating. Information from the WHO is used to develop a vaccine against the strain of influenza circulating each year, to protect those particularly at risk from the virus.

Additional surveillance systems to track influenza include the European Influenza Surveillance Scheme (EISS), and national systems include, amongst others, Groupes Régionaux d'Observation de la Grippe (GROG) in France and RealFlu in Germany.

Protection From Influenza: Vaccination

Vaccination is the cornerstone of influenza management, and is recommended by experts and the WHO for all high risk groups. The effectiveness of these vaccines has been demonstrated in various clinical trials.[22, 23]

How Vaccines Work

Influenza vaccine is administered before the influenza season and works by triggering the body into thinking that the vaccine is the influenza virus itself. The body reacts by generating an immune response. This immunity results in protection from that strain of the virus for the rest of the influenza season, without producing the symptoms of influenza.

Most developed countries have some form of government-funded immunisation programme, however the scale of the vaccination strategy varies widely from country to country. The WHO recommends that, ideally, all individuals should have the opportunity to be vaccinated, but economic restrictions may mean that only certain high risk patients can receive the influenza vaccine.

As discussed, children are a particularly high risk group for influenza infection. Vaccination rates vary widely, and as a general rule, otherwise healthy children are not routinely vaccinated.

A recent study revealed that only 5% of healthy children were vaccinated against influenza. In children with asthma, a vital risk factor for the development of complications such as respiratory illness, only 19% of children were vaccinated.[5]

A survey of clinicians in the UK, France and Germany showed that an average of only 31% routinely vaccinated children under five against influenza.[5]

Routine vaccination of children under five against influenza[5]

Country	% of physicians who routinely vaccinate
France	46
Germany	37
UK	11

New Treatments For Influenza In Children

Despite efforts to increase vaccination rates and prevent the spread of infection, influenza epidemics continue to threaten the health of our children every year. Not enough children are vaccinated and, if the vaccination received is not effective against the circulating virus, children can develop the illness and suffer from its symptoms and complications.

"Despite the availability of influenza vaccines, there are not enough children immunised each year as no country, other than the USA, has a routine immunisation program for children."

Professor Robert Booy
Royal London Hospital, London, UK

There is a clear need for effective treatments to fight the influenza virus itself and to help children infected to get better, quicker.

Over-The-Counter Remedies Do Not Fight The Influenza Virus

During an influenza epidemic, there is a significant increase in the use of antibiotics.[24] Over-the-counter (OTC) medicines, such as cough medicines, are also often used to combat the symptoms of influenza. However, antibiotics and OTC remedies do not attack the underlying cause of the illness – the virus – and their ability to stop influenza symptoms and some of the complications associated with the virus is therefore extremely limited, leaving the child suffering from untreated influenza for longer.

Influenza Fighters: Neuraminidase Inhibitors (NAIs)

Over the past few years there have been several important advances in influenza treatment, notably the development of new antiviral drugs, called NAIs. These treatments specifically target one of the two major surface structures of the influenza virus, the neuraminidase protein. When the neuraminidase is inhibited, the virus is not able to spread and infect other cells in the body.

The first NAI studied, and now available, zanamivir, is an inhaled formulation that acts locally in the lungs. The efficacy of this formulation in the treatment of influenza has been demonstrated in:

- Adults/adolescents
- Children in France and in Germany in children over the age of 12
- The elderly and patients with high risk conditions (particularly asthma and chronic obstructive pulmonary disease)

Clinical studies revealed that zanamivir can reduce symptom severity within 24 hours, reduce duration of illness by up to 2.5 days, and reduce antibiotic use for complications.[25]

Studies have shown that the influenza virus replicates in the upper and lower respiratory tract, and in the middle ear[26–31] – which as we have seen causes particular problems for children.

For this reason, the search for a more convenient orally administered and systemically active drug continued, and in 1999, the first oral NAI, oseltamivir (Tamiflu®), became available. It is now used for the treatment of influenza in adults and children aged one year and over in many countries including the US, Japan, Canada, the EU and Latin America.

Oseltamivir has been proven to be effective in adults[32–34] and is now available in suspension formulation for the treatment of influenza in children over one year old.

In children, oseltamivir given during an epidemic and within the first 48 hours after the onset of symptoms has been shown to reduce:

- The severity and duration of influenza symptoms in children by 36%[8]
- The incidence of associated otitis media by 44% as compared to standard care[8]
- The duration of fever by 24%[35]

Treatment with oseltamivir can help children with influenza to feel better, faster, with children returning to normal health and activity 44% more quickly than those treated with placebo.[35]

Importantly for parents and their employers, oseltamivir reduces the time children need extra care for their illness by 20%.[8]

Early treatment with an NAI is vital to ensure that the most benefit is gained. Clinical studies show that treatment with oseltamivir within the first 12 hours of symptom onset resulted in reduced illness duration by an additional 3.1 days, compared to that achieved with intervention at 48 hours.[36]

Recent studies show that treatment with an NAI can protect people who have been in close contact with someone with influenza, and prevent outbreaks within households.[37]

"Since children are key transmitters in the spread of influenza, affecting other children and also family members, evidence that oseltamivir is effective in preventing the transmission of influenza illness to children under the age of 12 years of age is encouraging."

Professor John Oxford
St Barts and The London, Queen Mary's School of Medicine and Dentistry, London, UK

Concluding Comments

Influenza in children is a serious threat – both to their health and to the health of those around them. Every year it accounts for millions of infections and thousands of hospitalisations, in addition to significant discomfort for the patients and worry and disruption for their families. However, it is seriously underestimated and often misunderstood. Our children are precious and we need to protect them from this virus.

This report has clearly demonstrated the threat that influenza poses to children's health, and is a call to action from influenza experts to respect the virus and to take important steps to protect our children.

Since vaccination is the cornerstone of influenza management, governments and healthcare systems need to consider extending vaccination programmes. Reserving vaccination only for high risk groups means that all other children are at risk. Additionally, should an unpredicted strain of the virus appear, there will be no protection even for those who have been vaccinated. Therefore, we need additional treatments to protect children from local annual outbreaks and the next potential global pandemic.

Children are unable to seek help themselves for influenza and so their parents act as the 'gatekeeper' to access a physician. It is therefore imperative that parents, carers and teachers are aware of the symptoms of influenza prior to a local outbreak and are prepared to take their child to the doctor as soon as they suspect infection. Children displaying influenza-like symptoms can therefore benefit from a swift and accurate diagnosis and, if they are infected, receive treatment as soon as possible – to reduce the time they suffer from influenza and its symptoms and to minimise the likelihood of complications and transmission of the virus.

Finally, increasing the availability of new treatments which are licensed for children should lead to reduced duration of illness, less severe symptoms and a reduced risk of secondary complications for children infected by the virus.

It is vital for us all, as guardians of our children and their future, to protect them from influenza.

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Influenza: do we know enough? is supported by an educational grant from Roche.

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