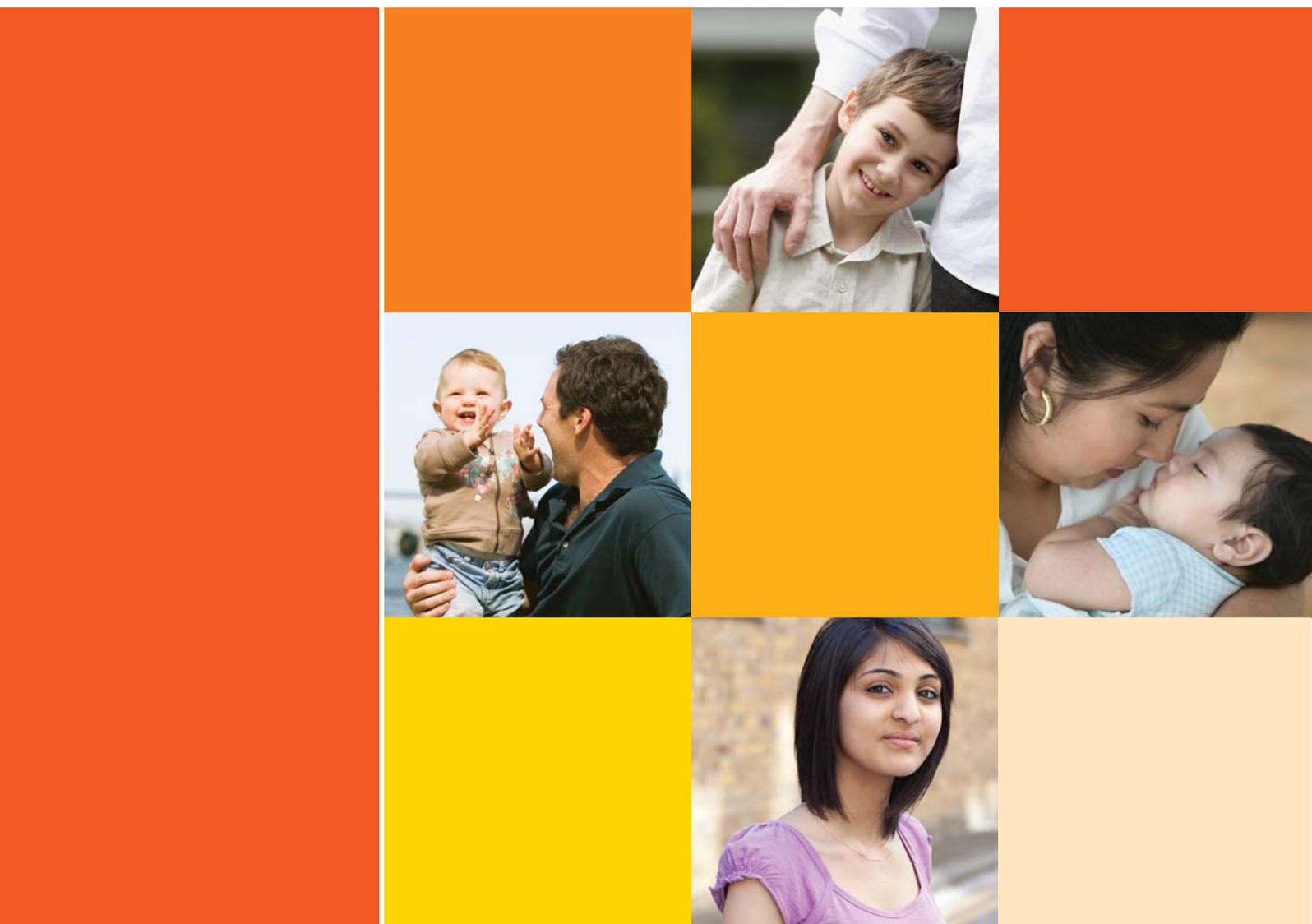


Meningitis C Vaccination

10th Anniversary



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Introduction

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This report has been created to mark the 10th anniversary of the introduction of the meningitis C vaccines and to acknowledge the vital role they played in banishing a centuries old killer from the UK and saving hundreds of lives.

The report consists of interviews conducted with a wide range of individuals who were key players in the development and implementation of the vaccines. The interviews set out the background to the vaccine campaign and interviewees give their assessment of the achievements of the past 10 years.

Over the last decade the disease has virtually vanished from the UK. In the fiscal year 1998-99 in England and Wales there were 701 cases of meningitis C in people aged 19 or under – in 2007-08 there were eight ^[1]. In 1998-99 there were 78 deaths in people aged under 19 – in 2007-08 there were none.^[2]

Most of all, the report demonstrates the scientific triumph, vision and sheer hard work of all involved in the introduction of the vaccination programme and its subsequent follow-through – researchers, healthcare professionals, civil servants and politicians.

The report aims to remind people of an innovative and hugely successful public health programme which has made the UK an immunisation pioneer against meningococcal disease and sets the bar for future equally ground breaking vaccination programmes.

The agreement of the interviewees to the publication of their stories does not constitute or imply the endorsement of any particular product.



Meningitis C in the UK – Background

Britain was the first country in the world to introduce vaccination against meningitis C – in November 1999.^[3]

The disease had been increasing in the UK over previous years, with a particularly virulent form (called ET37 complex C2a) worrying public health officials.^[3]

Prior to vaccination some 1,500 people a year contracted meningitis C in England and Wales alone and around 190 died – with a case fatality rate of 12.5%.^[3] Today cases and deaths from meningitis C have virtually vanished across the UK.^[1]

Meningitis C strikes particularly at children and teenagers. In the fiscal year 1998-99 in England and Wales there were 701 cases of meningitis C in people aged 19 or under. In 2007-08 there were eight.^[1]

In 1998-99 there were 78 deaths in people under 19 from meningitis C – in 2007-08 there were none.^[2]

In his 2008 annual report Professor David Salisbury, DoH Director of Immunisation, was able to say: “We are heading towards a time when meningococcal C is a disease condemned to history.”^[4]

Three vaccines were introduced a decade ago – Menjugate® made by Novartis Vaccines and Diagnostics (then Chiron), Meningitec® from Wyeth and NeisVac-C® from Baxter.

The introduction marked a coming together of the Government’s desire to protect its citizens and a developing technology that was already being investigated by a number of manufacturers.

The history of this period has been summed up by Professor Elizabeth Miller and Dr Mary Ramsay, of the Health Protection Agency, together with Professor David Salisbury, DoH Director of Immunisation, in a report for the Vaccine journal published in 2002.^[3]

“The programme had an immediate and profound effect on the incidence of meningococcal serogroup C disease in the targeted age groups.”



The researchers point out that in 1994 the Department of Health and the then Public Health Laboratory Service (now the Health Protection Agency) saw the rise in meningitis C cases and ordered a switch in research priorities away from whooping cough towards a new form of meningitis C vaccine that would work in infants.

Early trials in infants with candidate vaccines from the three manufacturers supported the hope the vaccines would work better than an existing older version of meningitis C vaccine.

The older vaccine gave no protection to infants under two years old, whereas the three new ones – called conjugate vaccines – appeared to do so, as measured by the level of antibodies (defence cells) against meningitis C in the blood.

The Department of Health vaccine team, led by Professor David Salisbury, called on the manufacturers to advance their testing and production processes by a year to 18 months earlier than they had planned for – which they did.

Say Professor Miller and colleagues: “The introduction of the vaccine was anticipated for October 2000, and plans were in development for resources to become available to support this. However, the winter meningococcal season of 1998/1999 showed continuing increases in the proportion and number of meningococcal C infections, especially in adolescents.”^[3]

“It was also apparent that the results from the clinical trials were strongly reassuring, and because of rapid recruitment into the trials, the research programme could be completed early. The manufacturers were asked in January 1999 to consider bringing forward the introduction of the vaccine by a year, and the three companies responded positively.”^[3]

“In February 1999, Frank Dobson, Secretary of State for Health, agreed that the programme should go forward in the autumn

of 1999, subject to demonstration of cost-effectiveness, availability of resources, and adequate supplies of vaccine.”^[3]

A British success story

The success of the programme became clear within a year. Say Professor Miller and colleagues: “The programme had an immediate and profound effect on the incidence of meningococcal serogroup C disease in the targeted age groups.

“Comparison of the numbers of cases of confirmed serogroup C disease between July 2000 and April 2001 with those in the comparable period in 1998-99 showed an overall reduction of 81%.”^[3]

The programme has produced lessons in vaccine development, particularly in terms of co-operation between the Government and manufacturers, which are still yielding benefits.

Professor Miller and colleagues conclude: “The UK experience with the planning, registration and implementation of meningitis C conjugate (MCC) vaccines illustrates what can be achieved if a pro-active approach is taken by those responsible for national immunisation policy.”^[3]

“A key factor in the success of the UK MCC development strategy was the independent funding from the DoH which ensured that the collaboration between public sector, academia and industry provided both the evidence for national immunisation policy as well as data to support licensure. Early dialogue between manufacturers and the licensing authority greatly facilitated this process.” say Professor Miller and colleagues.^[3]

Further studies of the meningitis C vaccination programme over subsequent years following introduction have continued to demonstrate its success.

Herd immunity

A study published in 2008 by Professor Martin Maiden and colleagues, which looked at the effects of meningitis C vaccination in teenagers aged 15 to 19, said that the carriage rate of the bacterium (the number of people carrying the germ) dropped by 94% in 2001 compared to 1999. In particular it cut the rates of the most virulent strain.^[5]

The researchers pointed to high herd immunity as a result – where unvaccinated people are also protected because circulation of the infection is reduced by those who have been vaccinated.

They concluded: “Young children were consequently protected from infection by the virtual elimination of the disease-causing meningococci from older age groups.”^[5]

They added: “Previous experience with conjugate vaccines suggested that protection is not only conferred by the induction of immunological memory among vaccinated individuals but also by reduction of carriage and transmission among the unvaccinated population.”^[5]

“Indirect protection is a likely explanation for both the immediate repercussions of the mass vaccination campaign and the persistence and accentuation of the effects over time. Indeed, the campaign’s impact on the protection of the unvaccinated is higher by these measures than might have been expected.”^[5]

Other countries

Meningitis C conjugate vaccines were introduced into routine vaccination programmes in Ireland and Spain in 2000, Canada in 2001, the Netherlands, Iceland and Belgium in 2002, Australia in 2003

and in Portugal, Germany, Switzerland and Greece in 2006. All countries experienced substantial declines in meningitis C disease following vaccine introduction.^[6]

The situation today

Meningitis C cases today are 95% lower than they were a decade ago.^[2]

Latest Department of Health figures show that by their second birthday 92% of children have been immunised against meningitis C. Overall the coverage for the vaccine has remained stable for at least the past five years.^[7]

The vaccine is given to infants in three doses – at 3 months, 4 months and 12 months. It is also available to all people under age 25 if they have not already been vaccinated. For people over one year old, only one dose is needed.^[8]

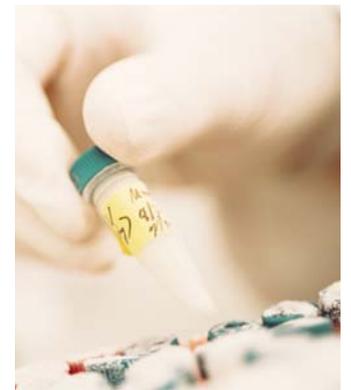
Meningitis C – perspectives on taming a killer

Many people have been affected by meningitis C and were involved in the process of developing and introducing the meningitis C vaccine to the children’s vaccination schedule in the UK – too many to include all their names here. The following however are accounts from those touched by the disease and the leading figures who helped make one of history’s most successful medical triumphs, the virtual eradication of meningitis C, possible.

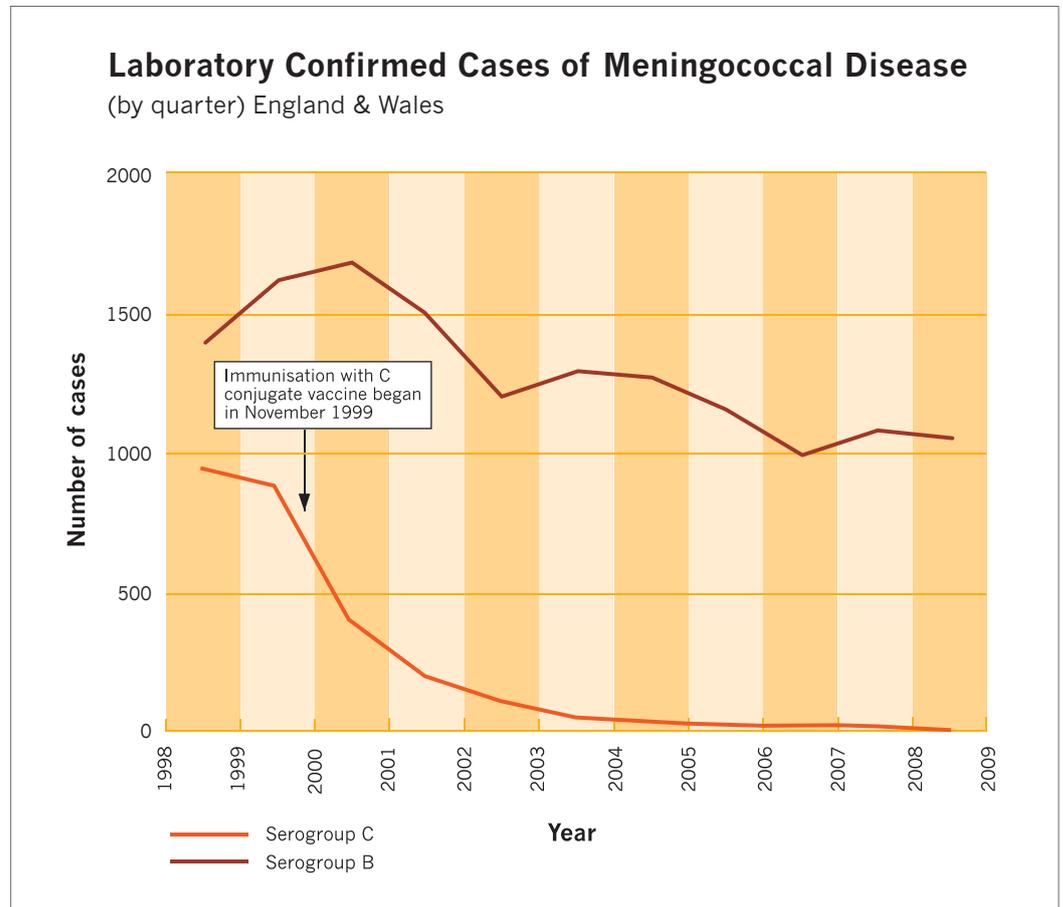
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Meningitis C cases today are 95% lower than they were a decade ago.^[2]



Graph showing the dramatic decline in cases of meningitis C cases from 1998 to 2009



Source: Health Protection Agency 2010





Ray Finch

Parent and meningitis research fundraiser

If builder **Ray Finch** allowed himself to dwell upon the fact that his younger son Martin might be alive today had he received his Meningitis C jab at the same time as his elder brother Scott, he would go mad.



Martin Finch

“He didn’t actually look like our son any more”

The 14-year-old teenager from Bognor Regis died of meningitis C on December 8 1999, only weeks after Scott (then 17 and considered high risk for the disease) was vaccinated. Martin was due to receive his injection three months later, as the national vaccination programme was rolled out to cover all children under 18.

“I try not to think of it in those terms,” muses Ray. “It is like being put in an awful situation where you have to decide which one lives and which one dies. So I just literally don’t go there, I’m just grateful that Scott’s still alive and healthy.”

Even 10 years on, this quietly-spoken father, whose family has raised more than £100,000 since to combat meningitis, admits he finds difficulty in coming to terms with the death of his happy, easy-going son, made unrecognisable by a disease that kills in hours.

The boat-mad teenager used to enjoy spending time with his brother and parents on their motor boat and quite often helped his dad with its preparation and maintenance before days out. This was a welcome distraction from the hectic family business life of operating three petrol stations. The weekend prior to Martin becoming unwell, he had been helping his dad to renovate a property and had gone to school at Bognor Regis Community College as usual the following Monday.

He was due to go to a squash lesson with a friend after school, but he began to feel unwell and went home to his friend’s house, where he was given a paracetamol for his headache. Feeling too unwell to ride his bike home, Martin called his brother, who picked him up by car, even though he was less than a mile away.

Once home, his mother Jackie suggested Martin go to bed. At around 9pm Jackie gave Martin Nurofen to see if this would alleviate the headache. Shortly after Martin was sick but Jackie put it down to a side effect of the Nurofen. He was complaining about having the light on, but his parents did not consider anything other than that he might have flu.

At around 1am, Martin told his mother he was fine and she should leave him and go to sleep. She was reassured, but at 5.30am was woken by a shout from the teenager.

Ray and Jackie’s younger son was completely transformed from four hours earlier – he was running a high temperature, incontinent and, most ominous of all, his shoulders were marked with a strawberry rash.



“The penny dropped straight away,” remembers Ray. “We knew exactly what we were dealing with and phoned the ambulance.”

The next eight hours were a nightmare as Martin changed from a sick teenager joking with his dad in the ambulance on the way to St Richard’s Hospital in Chichester at 9am, to the unrecognisable creature with a body swollen to twice its normal size by the afternoon when an emergency renal team arrived from Queen Alexander Hospital, Cosham, to transfer him.

“He didn’t actually look like our son anymore,” says Ray as he remembers those moments before doctors anaesthetised the youngster, before moving him. “We never spoke to Martin again.”

Suddenly, mid-afternoon of December 8, Jackie and Ray were summoned by a consultant and told there was nothing more they could do to stop the build-up of pressure on Martin’s heart. The medication was not making any impact on the relentless advance of the disease.

The consultant asked them to make the agonising decision to turn the life-support system off.

Jackie had already prepared herself for this moment. She says: “There was not an organ of his body that was self-supporting. He had lost his hands and feet. I would not have wanted such a physically-capable boy

to have recovered in the state that he was in – I could not do it to him.”

Only 36 hours after the family had left their home, their life had changed forever. In a stunned state of grief and disbelief, the three entered the house and stood in Martin’s bedroom hugging each other whilst Ray held his dead son’s dressing gown to his face. “I felt he had been stolen.”

The next few weeks passed in a numb whirl that both can barely remember. Following the funeral, attended by over 200 people and all of Martin’s classmates, his ashes were scattered in the sea near a navigation beacon in Chichester harbour that they used to pass frequently in their boat. Local parents were terrified about the death, and attendance went down to around 50 per cent at the school, until public health experts had managed to calm fears.

The necessity of running three businesses meant Jackie and Ray had to return to work a couple of weeks after Martin’s death. “It was horrendous,” says Jackie. “I would set off on the 20-mile drive to Worthing to work and catch a glimpse of boys in black school

jumpers on their bikes and I had to pull over and sob.”

In the months that followed, they searched to make sense of Martin’s death. The following May they did their first fundraising event – a cycle ride. Since then they have raised £110,000, of which Meningitis UK has received £100,000: through themed balls, cycling events, summer barbeques and walking with Meningitis UK on parts of their sponsored walks.

“We did it to have some kind of a focus in our lives,” says Jackie. “It gave us a reason for being. We were driven by a need to do something so that Martin’s life was not wasted.”



Jackie, Scott and Ray Finch

Three years after Martin’s death, the couple split up. The pair, whose family life was everything and who had spent all their time with their sons and extended family, could no longer avoid the fact that life would never be the same again.

Neither of them blames the break-up on their bereavement, but both recognise that it may have speeded up the process. Ray now has a new partner.

Ten years on, Ray finds it difficult to come to terms with the passage of time and the disease that he says he “hates like an entity” which stole his son.

The carefree lad is frozen in time – forever 14 – and he has to force himself to imagine what a grown-up Martin would have been like and might have done.

He cannot understand the eight per cent of parents who do not have their children vaccinated against meningitis C.

“By the time you realise what you’re dealing with it’s often too late. There’s nothing we could have done to have stopped Martin contracting meningitis other than giving him the vaccine against meningitis C.”

Scott, now 27, is settled with a girlfriend and lives locally. Jackie and he both find it difficult to talk about Martin, but she knows that he still has times when he struggles to cope with his grief for his younger brother.

Jackie can reel out the information for parents about making sure they have a meningitis symptom card to hand and not relying on the rash before seeking treatment for a sick child, but ultimately only the vaccine would have prevented his death.

She says, “Doctors have told me that if I had brought him in earlier, they would have just sent him home.

“I will continue to raise funds for meningitis until a vaccine is found for meningitis B. Vaccination is the only thing that would have saved Martin’s life – I can’t bear to think how different life would have been if only he had had it.”

Ray is concerned that many parents mistakenly believe that the very effective meningitis C vaccine covers all types of meningitis including B, which is not true. This is the reason why they continue to raise money to find an effective vaccine to fight all types of meningitis.

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Professor David Salisbury

Director of Immunisation
for the Department of Health

Most public health interventions take years before their results are visible. **David Salisbury** remembers seeing the results from vaccinating against meningitis C become apparent within weeks.

Professor Salisbury, DoH Director of Immunisation, recalls: “It was a phenomenal success. We get the data on a weekly basis of confirmed cases and one of the greatest pleasures for all of us, coming out of that winter of 1999 into 2000, was opening up the spreadsheet each week and seeing rows of zeros where previously there had been tens and up to almost hundreds of cases.”

“We saw in front of our eyes the disappearance of a disease. That was hugely gratifying to everybody that was involved.”

Professor Salisbury admits that the approach of the Department of Health in spotting a growing health problem and reaching out to vaccine manufacturers to provide a solution was “unusually proactive” but argues that the growing danger from meningitis C required speedy action.

A number of manufacturers were already working on prototype meningitis C vaccines, using the newer conjugate technology, but the prospect of working with the UK spurred them to greater efforts.

“The manufacturers were receptive – we wouldn’t have got anywhere if they weren’t. I think some of it reflected the UK’s already

fairly high profile leading in immunisation and I think it also reflected the recognition that we could deliver immunisation programmes of high quality and that we had really good epidemiological support.

“We had fantastic data so we didn’t have to wonder, we knew; we had surveillance that showed us that meningococcal C disease was indeed increasing. And we were able to use the very clear increase of group C disease to be able to accelerate the research that was going on and we got extra resources to do that.”

While the manufacturers conducted standard clinical trials into safety and efficacy, NHS researchers carried out a variety of studies to answer practical questions in order to ensure a speedy introduction when the vaccines were licensed.

“As soon as we got the product we put it into trial. But there was a difference in that the studies that the manufacturers did were clearly designed to generate high quality data that would be suitable for submission for a product licence.

“We had a slightly different objective. Whilst clearly that was very important we also wanted to get answers to policy related questions that those clinical trials wouldn’t necessarily address.

“We wanted to know how many kids would get sore arms, how many wouldn’t turn up to school the next day because they’d all phoned each other, how many would faint, what happened if they had a vaccine within a month or on the same day or a month later.

“These were practical policy questions that we wanted answers to, and by working closely but obviously independently of the manufacturers we were able to get both sorts of information very quickly. The relationship in terms of working out the science with the companies was very good.”

Professor Salisbury has praise for both the Conservative and New Labour administrations in supporting the vaccine work against meningitis C.

“We had very good support from the relevant ministers. The first part of the development work, when the research needed to be funded and the surveillance and so on required funding, that was supported by the Conservative government. And when the government changed then we did not have difficulty explaining why this was a priority. Frank Dobson and Tessa Jowell, because she was involved a great deal as well, were very supportive and they saw this as a really good millennium project.”

One unexpected bonus of the vaccination programme that particularly pleased Professor Salisbury, along with other public health officials, was the degree to which unvaccinated people also became protected, through the effect of herd immunity.

“We had no ability to predict what extent of herd immunity we would get. What that meant was that we were actually underestimating the benefit of the campaign. This is important because in the economic analysis that we were doing beforehand we were not presuming any herd immunity – we were only assuming direct personal benefit.

“When you get herd immunity you’re getting a bigger return on the number of doses of vaccine than you would expect from the number you use. So it was a big bonus and the place that we saw that first was the young people who were not in school – those aged 17 and 18.

“As they were not in school it was much harder to vaccinate them. So we were only getting about 40% coverage in that group but we were getting 70-80% in their peers who were still in school. So the ones who were in school were protecting the ones who were out of school and that was the first inkling that we were getting herd immunity.”

Professor Salisbury doesn’t believe that meningitis C will ever be completely eradicated, in the way smallpox was, as this would require a global effort that is unlikely to be paid for. But as a public health problem in Britain it has disappeared – something he is proud to have played a part in.

“You don’t get an awful lot of people worrying about meningitis C disease in the UK these days, do you?”

“I think all of us who took part in it were proud of what we achieved, because we went from zero to a full national campaign in five years flat; from no vaccine to a licensed implemented vaccine in five years flat, and we saw the disappearance of a disease. I suspect there are not many people who can actually say that that’s what they did.”

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Frank Dobson MP

Former Health Secretary

Former Health Secretary **Frank Dobson** well remembers being summoned to a room at the Department of Health in the spring of 1999 to be told by anxious officials that pharmaceutical companies had come up with a vaccine against meningitis C and that the work had been completed earlier than expected.



“It was presented to me as a problem – not as something wonderful because it was sooner than expected,” says Mr Dobson, shaking his head. “There was no money for it in the budget.”

So began a six-month battle by Mr Dobson to introduce something that he admits he could only see in simple terms – 100 dead children every year from the disease and more than 1,000 maimed. There was no choice in his mind but to introduce a vaccination programme as fast as possible, preferably by the autumn.

Walls of opposition met him immediately, with what Mr Dobson calls “the whole system” saying a vaccination campaign could not be made ready in the short time available.

The only voice on Mr Dobson’s side was David Salisbury, NHS Director of Immunisation, who said it was possible to mount a proper campaign as long as there was sufficient vaccine to target the most at-risk groups – under fives and adolescents.

“I tackled a couple of people,” remembers Frank Dobson. “David Salisbury was very keen to get on with it and shared my view that if there was any vaccine at all available it should be in somebody’s arm, and not in a bottle.”

Salisbury drew up a defensible set of priorities so that those who were at the most risk of catching meningitis C would receive whatever vaccine was available. Those who were in the lowest group would have to wait for more to become available – which he and Mr Dobson quickly identified as potentially difficult territory requiring explanation with anxious parents.

Whilst the two of them were determined to drive the vaccine programme forward against opposition from officialdom, they hit another barrier. Salisbury’s discussions with the three companies producing the vaccine – Wyeth, Baxter and Novartis Vaccines and Diagnostics (then Chiron) – revealed that they could not initially produce enough vaccine for everyone in the high-risk group.

The DoH accepted the view that vaccinating the highest risk group was the priority and that the programme would be rolled out as more vaccine became available.

The next hurdle to be jumped was money. Officials regularly came up to Mr Dobson and said that there would be difficulties if he were to proceed that autumn because there was no money identified for the programme in the budget.

“Officials were trying to put the frighteners on me saying that the Auditor General might be upset and investigate,” says Mr Dobson. “But I knew he would not be upset. It was not a lot of money. I said ‘There are contingency funds for this. The government is spending billions compensating farmers for killing thousands of cattle, I think we could find a few million to save a few babies’ lives.’”

For him it was a complete shot in the dark, as no one at that stage knew how much it was all going to cost, because they had no price per jab. The whole meningitis C issue had however become personal for him: “It was such an important individual thing, that I was not going to be stopped by the Auditor General. We would find the money.”

Regular messages began to be relayed to him from Downing Street that the meningitis campaign should not be in that financial year.

This was when Mr Dobson applied his most powerful test of action – his fictional Mrs Jones in Kentish Town: “Could I justify it to her?” he remembers. “Could I go to her and I say ‘I am sorry that we could not save your son from dying from meningitis C, Mrs Jones, even though there is a vaccine which could have done so – there was no money in the budget. Thank you and goodnight.’”

Meanwhile he looked on in admiration as Professor Salisbury collaborated with the pharmaceutical companies, with the then Public Health Laboratory Service and with the BMA in drawing up large-scale plans and rosters for the roll out of a large-scale national meningitis vaccination programme – the first such programme in the world.

The next shot fired across Mr Dobson’s bows, from Downing Street, was that money would not be forthcoming until a price per dose had been agreed. At this stage Mr Dobson volunteered to go on the television programme Newsnight and say he was prepared to save babies rather than defend the health budget.

Opposition gradually melted away. He smiles with some amusement at the memory of the battles: “At every stage, because I was firm, they just used to back down.”





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He was not even fazed by the fact that the newly-developed vaccine was so new that they had no measures of efficacy, but would proceed on the basis of correlates of protection (levels of antibodies in the blood) which was a controversial approach at the time.

This was not a serious risk in Mr Dobson's view. He says: "I knew the vaccine was safe and I thought the programme would work, but there was always the chance that it would not be as efficacious as it was claimed. But no one was going to die as a result."

Mr Dobson's sense of pride is clear. He confesses that in the past few weeks he received a graph from David Salisbury illustrating the plunging meningitis C figures following the 1999 introduction of the vaccine. With the graph was a note from Professor Salisbury saying "Look at the bottom red line and feel good!"

"It's a justification for all the bother," he says. "The whole government system is the reverse of a 'can do' system."

His impression, with David Salisbury as the 'fulcrum' of activities, was that there was a real desire from scientists to collaborate because they felt they had a powerful product. The charities enthusiastically added their support and the much-derided NHS came into its own to make the programme a reality.

As part of the campaign, it was arranged that students and others in the same age group, "the snoggers" as Mr Dobson described them, should be vaccinated with an existing meningitis C vaccine which was only effective for a year or two. The BBC Radio 4 Today programme gave a platform to a GP who claimed he had not been allocated any of this vaccine and that it was all a shambles. Mr Dobson was delighted when, without any prompting from him, Dr. John Chisholm, then leader of GPs at the BMA, later came on the programme to say that the BMA had been involved in developing the campaign, that the arrangements were working well and that all the GP needed to do was ring up. To Frank Dobson it proved what could be achieved when everybody was committed.

He assumed the vaccination programme would be successful, but no one knew quite how successful for a year.

"I am not a particularly vain person," he states. "But taking part with David Salisbury in the meningitis C vaccine programme was one of those things where my personal commitment enabled me to change things. It has saved lives, and a great deal of anguish for families, and I am very proud to have done it."



Professor Ray Borrow

Head of the Manchester-based vaccination evaluation unit of the Health Protection Agency

With 150 children dying every year and twice that number left permanently crippled, how long do you wait before you judge a vaccine to be safe? For **Ray Borrow** this wasn't a hypothetical question.



Although some scientists wanted more information about a new meningitis C vaccine he was convinced that to wait longer before rolling it out would be unethical.

The scientist says: "To have obtained the kind of information that these experts were saying we should have, would have taken another one to two years. More than 150 kids were dying every year at that time. How do you defend that?"

Luckily Professor Borrow was not alone in his view. Back then in 1999 the Head of Immunisation at the Department of Health, David Salisbury, was determined to drive the programme through and so was Health Secretary Frank Dobson. The pharmaceutical companies were working closely with government scientists and all the evidence seemed to justify what some saw as an untested approach.

Pressure was put on the UK researchers to come up with more information on the conjugate vaccine via time consuming clinical trials, but they stuck to their decision to rely on correlates of protection – a measure of the antibody activity induced by the vaccine – on the basis of earlier work on other vaccines.

Professor Borrow does not try to hide his pride at his part in the world's first national meningitis C immunisation programme in 1999, a year ahead of schedule.

"When you consider that we were at about 1,000 cases in 1999 and we're down to less than 13 now – it's a reduction of more than 90%. I think that just says everything – it's been the biggest public health intervention of the decade."

He puts the success down to "press, politics and a nice bit of crystal ball gazing". He expresses real admiration for David Salisbury and his foresight in locating money in the mid nineties so that as soon as the vaccine was ready the programme could be rolled out.

The press helped by covering the story with headlines like "killer bugs" that alerted the public. In the background, discussions were going on between politicians, academics and pharmaceutical companies to make the programme happen as swiftly as possible.

Says Professor Borrow: "We all pulled together and it was brilliant."

When it all started for him he was a young man with a feeling that he was on the edge of new medical breakthroughs. After leaving Manchester University in 1989 he started work at the then Public Health Laboratory

Service in Manchester on a Medical Research Council grant looking at meningitis B. It formed the basis of his PhD.

The start of the meningitis C story for Professor Borrow was 1994. There was already concern among public health experts because of a sudden explosion in the number of cases in Canada and Spain, when suddenly there was a dramatic rise compared with the previous year in the UK.

The pressure to do something to address it started. Professor Borrow's team was called upon to evaluate the immunogenicity (effectiveness) of new conjugate vaccines that, unlike earlier vaccines, protected under-twos as well as the older age groups.

He had just formed the Vaccine Evaluation Unit in Manchester, at first working alone then joined by a second colleague. Now the unit consists of 34 scientists.

He remembers the excitement as he received laboratory samples from trials supervised by Professor Elizabeth Miller at the Health Protection Agency in London. Test tube results were so clearly positive. Relationships with the three manufacturers – Novartis Vaccines and Diagnostics, Wyeth and Baxter – whose products Borrow's team were comparing, were good. So were links with the Health Protection Agency and the Department of Health.

The need for urgent action increased late in 1997. Cases of meningitis C had shot up and Professor Borrow's team was asked to generate a large quantity of data showing the effectiveness of the vaccine, to new tough deadlines:

“We definitely had to speed up to make sure everything was ready for the introduction. For more than a year, five of us worked long hours in the lab in the evenings and weekends to get everything tested and managed to knock a few months off the schedule.”

During the spring of 1999 they knew there would be a surge the following autumn and winter. The vaccine had to be ready before

the winter hit, but one manufacturer alone could not produce enough of the vaccine to cover all the children in the high-risk groups, so all three companies had to work together.

He is also very proud of the work they did afterwards in evaluating the effect of the vaccine.

They discovered an unexpected bonus in the form of “herd immunity” – the vaccination of more than 85% of the under 18s produced a 65% reduction in cases of the disease in teenagers who were unvaccinated.

Even more exciting, was the discovery that disease had disappeared in babies under three months old (the age at which they had their first meningitis C vaccination) because less of the bacteria was circulating in the community as a result of older children being protected.

He is also proud of the impact the UK success had in encouraging other countries, particularly the Netherlands, to mount their own immunisation programmes.

Professor Borrow is currently working on the eagerly-awaited meningitis B vaccines to establish how effective they are and to make a cost-effective case for a programme.

His laboratories are also working flat out towards the launch of a major immunisation programme against meningitis A in a belt of Africa where the incidence of the disease is 1,000 cases per 100,000 of the population. Much of the work towards this is based on lessons from UK meningitis C vaccination programme.

Looking back over the virtual eradication of meningitis C in a decade, Professor Borrow says: “The best thing about this, to me, is that I was there at the beginning and I'm still here now at what I call the end. So I've seen the whole thing through.”

He adds: “What I would really like is to defeat meningitis B, but it is great to have done meningitis C on the way.”

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YEARS

“What I would really like is to defeat meningitis B, but it is great to have done meningitis C on the way.”





Professor Elizabeth Miller

Consultant Epidemiologist and former Head of Immunisation at the Health Protection Agency

When **Professor Elizabeth Miller** needs to remind herself of the importance of her work, she thinks of how many people are alive thanks to the national immunisation campaign against meningitis C.



Professor Miller, who supervised many of the studies before the vaccine was developed and the teams assessing its effectiveness afterwards, says: “We know in the first 10 years of the programme well over a 1000 people are alive right now thanks to Men C immunisation who would otherwise be dead had we not introduced the programme.”

Professor Miller has been at the forefront of conducting key research that has paved the way for introducing and evaluating a number of vaccination campaigns, including the current swine flu programme. She is used to getting things done and she clearly regards the implementation of meningitis C vaccine with special pride.

The vaccine programme was only achievable thanks to a “stupendously successful” feat of multi-agency co-operation and enlightened thinking 10 years ago to mount the necessary clinical trials with full regulatory approval, all in record time.

She had been involved for years in work that prepared the ground for the development of the meningitis C vaccine such as running trials on whooping cough vaccines and its compatibility with other vaccines. Then in 1994 as the number of meningitis C cases in the UK started to rise, killing young children and adolescents, it became clear to Professor Miller and her colleagues that a meningitis C vaccine was needed to save lives.

A colleague – Keith Cartwright – had been running early trials in Gloucestershire of a new weapon against meningitis A and C called a “conjugate” vaccine. The only vaccine available at the time to protect against meningitis C was a jab called a polysaccharide vaccine, but this did not protect infants under two, who were one of the most high-risk groups, and at best offered only short term protection for older groups. The development of a conjugate vaccine, based on the same principles as the successful *Haemophilus influenzae* type b (Hib) conjugate vaccines was showing promise in early trials.

Professor Miller explains that she and her colleagues were gathering evidence that the new conjugate vaccines against meningitis A and C were potentially powerful tools against the strains. However since meningitis A is not a problem in the UK, a version would have to be produced that only offered protection against the C strain.



Three manufacturers began working flat out on conjugate vaccines aimed only at the meningitis C component – Chiron (later Novartis Vaccines and Diagnostics) Wyeth and Baxter.

Crucially, the team and the regulators had to be sure the manufacturers had a safe and effective product. The team got to work looking at how this vaccine could be licensed as rapidly as possible while still ensuring that all safety and effectiveness standards were met.

Professor Miller had discussions with colleagues who believed it might be possible to introduce it using data on how well the vaccine activated the body's immune defences against the disease by stimulating protective antibodies in the blood rather than carrying out lengthy studies to test its ability to actually prevent disease.

Things for Professor Miller and her team really began to hot up when the Medicines Control Agency (now the Medicines and Healthcare products Regulatory Agency, MHRA) indicated that it would take an enlightened view and licence the vaccine on the basis of correlates of protection (the measurement of the immune response in the blood rather than proof of efficacy). This was a different and radical approach but, more importantly, one that did not compromise vaccine safety.

She knew co-ordinated action was needed: “I could see that we had three good candidate vaccines but we needed to do some really serious product research and development in partnership with the manufacturers.”

Over the course of a day of serious and in-depth brain-storming, she and a group of colleagues from different UK public health organisations sat in her office to work out exactly what studies needed to be done to support the introduction of these vaccines. These covered the need for a catch-up programme once the most at-risk groups were protected, the numbers of doses needed according to age group and the question of compatibility with other vaccines.

On the basis of this, Professor Miller wrote a grant application to the Department of Health to fund research to determine the vaccine's introduction.

“When I look back on it, it was quite ambitious really,” she says with pride.

The next three years passed in a whirl of research activity as Miller supervised a number of key tests the three manufacturers needed to gain their product licences. “We really bust a gut,” she admits, recalling trials involving 1,800 children to find out for example whether a single dose would be enough and whether these jabs could be given at the same time as children received others.

She spent long evenings in school halls facing barrages of sometimes hostile questions from parents wanting to know why their children were being used as “guinea pigs” and asking why – if they were so effective and safe – these vaccines were not being used already.

“That was tough but absolutely essential. One had to be able to think on one’s feet when parents threw these questions at you. They wanted to know how exactly we were going to protect their children and it was entirely appropriate that we provided the answers.

“There would be parents in the audience who had recently lost a child from meningitis, and that was terrible,” she recalls.

She considers David Salisbury, Director of Immunisation at the Department of Health, deserves much of the credit for making the meningitis C programme happen. She says: “We had quite a unique opportunity. The time was right – we had a disease that was increasing and we had David Salisbury at the Department of Health who has vision.

“It was the fact that we knew that if we completed the research programme successfully, under David Salisbury’s

leadership there would be an implementation strategy. You can do the fanciest trials but if nobody’s going to get the money for the programme, take responsibility for rolling it out, working out how and when it should be delivered, then there’s no payoff.”

Professor Miller doubts whether meningitis C can ever be completely eradicated, because of the amount of foreign travel to countries where the disease is rife, but with only one death from the disease last year, she is clear that it is no longer a public health concern for the UK.

“In this country, vaccination has dealt with the problem of meningitis C but that doesn’t mean we shouldn’t keep our eye on the ball. Immunisation is important to keep this disease at bay – if people stopped being vaccinated, it could come back very quickly.”

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Dr Rino Rappuoli

Global Head of Vaccines Research for
Novartis Vaccines and Diagnostics

Many people were sceptical when **Rino Rappuoli** in the early 1990s came up with a plan to develop a new conjugate vaccine against deadly meningitis C for the public relying on laboratory tests of its ability to protect people against the disease, not large-scale population testing.



“It is something that really makes me very proud,” he states. “Meningococcus C is the best experience I ever had in vaccinology.”

“It is something that really makes me very proud,” he states. “Meningococcus C is the best experience I ever had in vaccinology. I had seen the figures before of more than 1,500 children getting the disease every year, in the UK alone, more than 100 deaths and 200 severe disabilities every year. Basically in a year the disease disappeared.” [3]

It was not achieved without a battle and a strong belief in science and his own power to find the answers. He remembers with some amusement the reaction from scientists and the regulatory agencies to his decision to use “correlates of protection” as a measure of the vaccine’s success against the disease. This means that instead of waiting years to prove efficacy, they were approved once they were shown to produce a certain level of defence cells in the blood against the illness.

“People at the beginning were very sceptical – some told me more or less that I was crazy,” he laughs. “But basically I did not listen. I continued to do the science to show that the correlates were solid as planned and by the time we were at the end of the project the science had moved so far that nobody asked the question. Those people that ten years before had said, ‘you are crazy’ were fully convinced I was right.”

For him back in the early 1990s time was of the essence. Population testing for a vaccine he knew was both safe and effective would have added more time. That meant the deaths of children and young people that could have been prevented. So he stuck to his guns to produce the vaccine on his terms.

“You know you are fundamentally right if the science supports you. Truth always counts over scepticism.”

In his case the route towards his success in the war with meningitis C had started much earlier. In the late 1980s he was working to develop a conjugate vaccine for haemophilus influenzae that went on to become the first licensed conjugate vaccine.

It soon became obvious to him that conjugate technology had great potential to combat a disease no one at the time was thinking about – meningococcus.

He looked for grant funding and around 1990 he began to collaborate with scientists Paolo Costantino at the Sclavo laboratories in Siena (which later became

Chiron and then Novartis Vaccines and Diagnostics) as the team to create the first conjugate for Meningococcus A and C. Phase 1 clinical trials in the Philippines went well and results were published in 1992. Paul Henri Lambert from the World Health Organisation was a major supporter of the project.

The real Eureka moment for Rappuoli came during further trials in Africa in the early Nineties which encouraged him to believe his team might be on the road to a major scientific victory over the meningitis C bacteria.

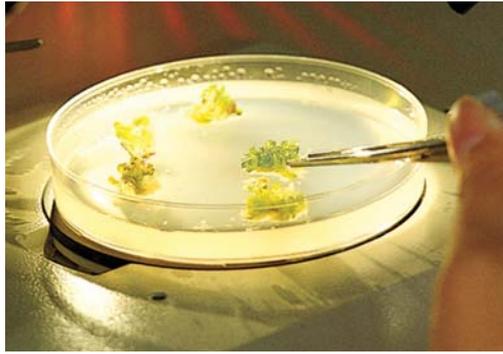
The UK provided him with the opportunity to prove that this was the case when he realised that the UK had a major problem with Meningitis C. Armed with the results of the Philippines and African studies, he approached the Public Health Laboratory Service (PHLS) (now the Health Protection Agency) to be met with great enthusiasm.

The UK had a vaccine against Meningitis C, called a polysaccharide vaccine, which did not work on babies – one of the groups most at risk from the disease. Rappuoli's conjugate vaccine was effective across all age groups.

The PHLS ran its own trials on Rappuoli's team's vaccine which produced what he describes as the "definitive answer" that both meningitis A and C strains could respond spectacularly to vaccines made using conjugate technology.

Rappuoli's work had found a market. First, however his team had to work on their combined vaccine and remove the meningitis A component as the director of immunisation at the Department of Health David Salisbury did not want any element included that was not a threat to the UK population.

Speed for Salisbury was of the essence and he came up with a development plan for the vaccine that stunned Rappuoli, by taking nearly two years off what his company thought was possible: "He was pushing in the right way," says Rappuoli. "I wish I always had a development collaborator like that."



Sclavo had, by then, been taken over by Chiron and two other manufacturers then joined what Rappuoli describes as "the race" to produce the vaccine in industrial quantities.

These days he is working towards the development of a meningitis B vaccine, which has eluded scientists to date because of its many strains and its ability to mutate. A successful vaccine could be available within three years, in his view, as his teams are doing Phase 3 studies in Europe at the moment.

Already he has managed virtually to eliminate a Meningitis B epidemic from New Zealand, where there was a single strain in epidemic proportions. Professor Rappuoli is clear: "The New Zealand thing would not have been possible without the UK because we relied on the UK for knowledge about the correlates of protection, the age groups to vaccinate and the way to do things."

"The commitment of the Government is essential for a project like this. You cannot vaccinate a country without the public health of one government being fully supportive."

Does he expect a meningitis B programme in the UK to make as dramatic an impact as the meningitis C? "Oh yes," he says. "I believe it would be a very similar picture."

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"Basically in a year the disease disappeared."



Steve Dayman Chief Executive, Meningitis UK

In the desolate days after his 14-month-old son Spencer had died of meningitis and septicaemia, **Steve Dayman** remembers being in the queue for the polio vaccine at a primary school in rural Gloucestershire and wondering why there could not be a single vaccine for meningitis.



That was back in 1982, when Steve was in the haulage business, rather than the chief executive of Meningitis UK.

Doctors attending to the dying child had known so little about the condition that they had reference books open on the intensive care bed as they tried to save the youngster's life. A specialist told Steve that there would never be a vaccine for any form of meningitis in their lifetime.

“Losing a child is the worst thing that can ever happen to anyone. It is not something you ever really get over. There are still days that I am overwhelmed by emotions.

“I describe the loss in terms of shock and emptiness. One minute he was there and the next he was gone. It was like being hit in the chest by a sledgehammer.”

Every parent in his situation blames themselves afterwards and Steve is no exception.

He remembers the GP coming to their house the day Spencer was taken ill and deciding that the child needed to go to

hospital. Steve and his wife Gloria drove their son there together with no sense of urgency, such as their lack of knowledge. The three of them waited for a couple of hours to be seen, with Steve tickling his sick baby's cheek to make him laugh.

“To think that I was tickling his cheek and all the time he was dying,” says Steve. “That is something I will never forget.”

Since then he has seen the whole picture of meningitis change. In 1992 the Hib vaccine was introduced, followed by the meningitis C vaccination in 1999. Steve says: “I am not one to get excited, but I can't believe how things have changed. I believe that in my lifetime there will also be a vaccine covering many of the strains of meningitis B.”

Steve may now be the suited businessman, often seen at conferences alongside world-leading medical experts, but it is clear that the man who has helped to raise millions of pounds towards meningitis research through this charity, is driven by the tragedy that struck him and his wife Gloria 27 years ago. It was a blow that changed the course of their lives forever.

“At the time there was nobody to talk to and not a single leaflet or support group,” recalls Steve. “We felt so alone. It was not until the Stroud meningitis outbreak in the

mid 80s that we met other families that had suffered the way we had. The whole situation when we lost Spencer felt so hopeless.”

The past 10 years since the introduction of the meningitis C vaccine have been particularly inspiring for Steve. He has particular admiration for David Salisbury, Director of Immunisation at the Department of Health, who he initially cast as the enemy for not working fast enough to introduce the vaccine, until he realised the key role the scientist was playing behind the scenes, working with the Government, academic organisations and drug manufacturers.

“I’m full of admiration for David Salisbury,” he says. “The meningitis C vaccine has been a tremendous success. In the early 90s, meningitis C accounted for 18 per cent of cases meningococcal meningitis, and that went up to around 38 per cent. Now the disease has almost been eradicated in this country.”

Following Spencer’s death, Steve gave up the haulage business he ran with his wife and family near Thornbury, although he had left secondary modern school at 14 with no dream other than to drive lorries. His loss drove him to libraries in an angry attempt to find answers to his many questions about the disease that had stolen their son.

He left the business in the hands of his wife and family while he went off around the country to conferences and visiting other families who had lost loved-ones to the disease, trying to drum up support for the meningitis crusade. At one conference in 1991 he came across the then-unknown “tumbler test” for septicaemia, which was being described by a Norwegian scientist. He brought the accompanying literature back to Bristol, had it translated and turned into a leaflet. The tumbler test is now the best-known way parents have to diagnose meningitis.

It soon became clear to Steve that the fact Spencer had died within 24 hours of being admitted to hospital meant little could have been done to save him. The only positive way ahead was to find a vaccine.

In 1986 he became the founding chairman of the Meningitis Trust, which evolved from a support group formed after the meningitis outbreak in Stroud. It is predominantly an awareness-raising organisation which focuses on aftercare and treatment. Steve stayed there for three years but his heart remained set on finding a vaccine – he wanted to eradicate the disease all together. He remained closely involved with the meningitis cause and in 1999 he was asked to become the Chief Executive of Meningitis UK, a new charity with a focus on research.

“I am not one to get excited, but I can’t believe how things have changed. I believe that in my lifetime there will also be a vaccine covering many of the strains of meningitis B.”



In the 10 years since the charity was founded, it has raised £4.7million towards life-saving vaccine research. It funds cutting-edge projects involving leading professors from top universities across the country. It's thanks to their work scientists now predict the illusive vaccine for meningitis B could be a reality in less than a decade.

Steve sees himself as a galvaniser of troops, rallying families that have been devastated by a disease that strikes with lightening rapidity, leaving many children and babies maimed if it does not kill them.

He observes a greater unity in the medical world in the UK than in the eighties, as the pharmaceutical companies and the Health Protection Agency collaborate more to make inroads on meningitis B. He sees many more conferences taking place, making sure scientists are more aware of each other's work.

Steve wants to see more of the kind of collaboration that led to the introduction of the meningitis C vaccine a year earlier than originally anticipated: "I would definitely like to see more of this. The manufacturers are more open than they were. It is the best way. The Department of Health has to know what is going on so that David Salisbury and his colleagues can make the decisions to introduce a national vaccination programme."



Despite the advances, he worries that public confidence in vaccination has been rocked by the MMR controversy and recent attempts to implicate the HPV vaccine in a young girl's death. He feels that his charity has a strong part to play in maintaining public confidence and encouraging the eight per cent of parents who do not have their children vaccinated, to cooperate with programmes.

Says Steve: "If everyone knew what a horrific disease meningitis is – and saw pictures of children overwhelmed by septicaemia – that would close the eight per cent gap even further."

He adds: "I would not have got involved in any of this had it not been for Spencer's death. If he had survived unscathed I would probably have gone back to the person I was and carried on running my haulage business."

"It is because of Spencer's death that there is much greater awareness. It's very rewarding to hear from families who have identified the symptoms early enough thanks to our literature highlighting what symptoms to look out for. Sadly, we know that even in the best hands and with the best treatment, it's still not enough to save a life, which is why vaccines are so important."

"I was told that there wouldn't be a vaccine in my lifetime. But so much knowledge and research has come out of Spencer's death, including the meningitis C vaccine. We're determined to find a vaccine for meningitis B now that will be Spencer's legacy and redemption for me."

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Chris Head

Chief Executive, Meningitis Research Foundation

Chris Head believes that the meningitis C vaccination programme is an “unsung triumph” of British medical research – but a belief that meningitis as a whole has been beaten is very wide of the mark.



“There is nothing so terrible as losing your child. It is just so totally devastating for families. The meningitis C vaccine which has saved thousands of lives, and the agony of their families, has to be an unsung triumph,” he says.

Ironically Chris feels that the meningitis C vaccination campaign has been such a success that it has made some people think that this is the only strain and that the disease has now gone away. But there is no place for complacency in his view:

“Some 3,500 people are still getting meningitis every year in the UK and Ireland, most of them children. Meningitis B is the main cause, against which we have no vaccine. For every 10 people who contract meningitis, one will die and two will have long-term problems such as amputations, brain damage, epilepsy and deafness. This disease has not gone away.”

The Meningitis Research Foundation fights death and disability by funding scientific research. It has 24 research projects in its current programme. Since it was founded in 1989, the charity has awarded 128 research grants, leading to many advances

in the prevention, detection and treatment of meningitis and septicaemia. The total value of the Foundation’s investment in scientific research is over £15.6 million.

Chris knows personally the pain of the loss of a child. He and his wife Lynne lost their daughter Katy in 1991 to leukaemia at the age of four, after two years of harrowing treatment.

The death of Katy turned him and his family upside down and changed the course of his life. Shortly after, he decided to leave his work in music festival management to work in the charity world, first with CLIC UK (Cancer and Leukaemia in Childhood) and later at Penny Brohn Cancer Care until 2007, before joining MRF that year.

Chris believes many lessons can be learned from the success of the meningitis C campaign, which he feels should be applied to the implementation of a meningitis B vaccine, when one is finally produced.

“It showed that you can undertake a population-based immunisation programme, including an extensive catch-up campaign to vaccinate teenagers too. It required a mass co-ordination programme, and huge credit should be given to the government and the NHS for making this happen.

“It provided a blueprint of the various logistical steps that one needs to go through to ensure the successful introduction of a vaccine.”



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“It is not enough to have the medical research, the testing and the licensing procedures, one also has to make sure that awareness of the disease is high in society so that the groundswell of support is there for a quick introduction of a new vaccine as soon as it is available on the market.”

This partnership approach of pharmaceutical manufacturers, Department of Health, NHS and charities working together is one for which he has the highest praise.

One of his great concerns during the current difficult financial climate, is to ensure that critical questions on the meningitis agenda are not allowed to drop off the list of priorities in what he describes as “what could be a competitive environment”, such as a future meningitis B immunisation programme.

“The close collaborative relationships already developed during the meningitis C programme are essential to the making of a joint case in the future.”

Part of making the case for meningitis prevention is highlighting the life-long cost of the disease to those who survive and their families.

MRF is working with Bristol University to look at the impact of such permanent disabilities as profound hearing difficulties and multiple amputations. Data from the charity’s 15,000 members and supporters is being analysed to do so. Preliminary results from the two and a half year study will be available this year.

Says Chris: “Our hunch is that the life-long cost of meningitis survival is very significant and that there’s a good argument on cost-effectiveness grounds alone to introduce a meningitis B vaccine.”

It bothers him that vaccination take-up is still only 92% in specific parts of the country. Part of that he puts down to information not reaching people who are under-privileged and who do not have access to a range of healthcare services. The other group preventing the 100% take-up are “the middle-class parents who have concerns about vaccinations and do not perceive them as natural or organic.”

He does not feel that meningitis will ever be wiped out completely, due to the bacteria’s ability to change itself, but he feels that he will see the day when it no longer has any importance as a public health threat.

Meningitis Research Foundation marked its 20th anniversary in 2009. The positive achievements of the past twenty years in the meningitis field is what drives Chris Head on with the charity’s work. He says: “If we keep it as a key focus we can make further good progress over the next 20 years.”



Sue Davie

Chief Executive, Meningitis Trust

The take-up rate in the UK for vaccination against meningococcal group C disease is 92%. But Sue Davie worries it is not 100%.



The Chief Executive of Meningitis Trust – which provides a unique range of professional services and community based support to people affected by meningitis – asks herself what is stopping those remaining eight per cent of the target British population from gaining the protection that could save them from death or lifelong disability.

“Every day, I see the devastating impact of meningitis, and I would love to think that we can get the 92% up to 100% to reduce the number of people whose lives are changed forever after meningitis strikes.”

A decade on from its introduction, Sue Davie looks back on the meningococcal C vaccination programme as an “incredible success”. The sheer speed of its implementation astonished many people working in the charity and health sectors.

The introduction of the vaccine was done against a background of fear of what people could only see as a killer disease. She says that the charity was overwhelmed with 70-80,000 calls in 1998/9 compared with 15,000 last year. “We charities were seen very much as an independent source of information,” she says.

The key to the programme’s success was the way that government, health sector, charities, the manufacturers and academia worked together, she says. No organisation, she believes, can claim to know everything and the sharing of information with a different approach can only enrich

the knowledge base and enable more people to be reached and encouraged to get vaccinated.

Scepticism of the pharmaceutical companies was great at the time, with charities like Meningitis Trust being challenged by some parents of children suffering with the disease for working with them.

But vaccination is the only way to prevent meningococcal group C disease and the pharmaceutical companies were the only ones capable of the levels of investment required to develop a vaccine and thus vital to the cause.

Despite the reduction in cases of group C disease, she believes it is vital to highlight the continuing dangers of meningitis as it can be caused by many different bacteria, some of which cannot yet be prevented by a vaccine, and viral meningitis must not be forgotten.

“Patient groups like ours have a role to play on an ongoing basis to make people aware that meningitis still exists,” she insists.

“There is a danger of complacency in the population as inroads are made into controlling some strains of the disease through vaccination. Awareness of the horrors of the disease must always be publicised to keep the vaccine take-up rate high, and to ensure people remain vigilant for the signs and symptoms of the disease.”

“There are vaccines to protect against some strains of meningococcal group C disease, pneumococcal meningitis and Hib meningitis, but there is still no vaccine against meningococcal group B disease which is now the most deadly strain in the UK.”

The Meningitis Trust has commissioned a large study with the Institute of Child Health, to help support the case for the introduction of a meningococcal Group B vaccine by looking at the true burden of this disease in terms of the physical, psychological, social and economic impact and the associated need for

lifelong support. The study involves 400-500 children and is due to publish its results next year.

“We do not want there to be a situation where a vaccine for meningococcal B is licensed but there is not the information to justify its introduction.”

Having just returned from an international meningitis conference and heard about the plight of other countries like the USA which do not have a free national childhood immunisation programme, Sue has a heightened pride in what the UK has in place.

“We should hold our heads up high while also actively sharing why and how we did it with other countries”. However, she continues, “As successful as vaccine programmes are, we must never forget those people whose lives have already been devastated by the disease and those people who will get meningitis in the future. I am determined to ensure that there is support for life for all those that need it and the Meningitis Trust will continue to fight to ensure it is provided.”

10
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