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Paediatric surveillance of Acute Flaccid Paralysis in the Netherlands in 1997

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CONTENTS

ABBREVIATIONS

AFP Acute Flaccid Paralysis
GBS Guillain-Barré Syndrome
NSCK Dutch Paediatric Surveillance Centre
(Nederlands Signalerings-Centrum Kindergeneeskunde)
RIVM National Institute of Public Health and the Environment
(Rijksinstituut voor Volksgezondheid en Milieu)
SIG Stichting Informatiecentrum Gezondheidszorg
WHA World Health Assembly
WHO World Health Organisation

SUMMARY

AFP surveillance continues to be a critical component of the WHO global polio eradication campaign. Since October 1992, surveillance for AFP has been established in the Netherlands as part of the NSCK surveillance system. The NSCK surveillance system is an activity of the Dutch Paediatric Association and is using an 'active' surveillance approach to monitor rare disorders in the child population. The survey on AFP carried out by the RIVM comprises the collection of additional information concerning clinical and laboratory findings, vaccination status and residual complaints of the reported AFP cases through questionnaires. Furthermore, the reporting clinicians are contacted by phone to stress the need of adequate and timely faecal sampling. Compliance with the scheme in general is high (91% in 1997) as well as the completion rate (100% for 1997). However, reporting of AFP is still lagging behind which might be due to lower compliance rates for the different conditions listed.

According to WHO, surveillance for acute flaccid paralysis must meet four stringent criteria before certification can be considered. Results for 1997 for the main criteria were as follows:

1. The **non-polio AFP rate** for the Netherlands (an indicator for the sensitivity of the surveillance system) for 1997 was 0.63 (target: non-polio AFP rate of ≥ 1 per 100.000).

2. Progress has been made in **first stool sample collection rate,** up from 58% in 1996 to 77% in 1997 with 54% of the samples taken within 14 days after the onset of paralysis (31% in 1995/1996). However, adequate stool sampling and testing according to WHO criteria was not completed in any of the cases because of a **second stool sample collection rate** of 0% .

3. In 1997, 90 % of the cases were adequately and timely investigated, meaning within the required 48 hours after the onset of paralysis. Information regarding the presence of residual paralysis at 60 days was available for all reported AFP cases.

4. Considerable progress has been made in the **timeliness of reporting**. The time delay between receipt of the completed questionnaire at the RIVM and the end of the month of first symptoms has been reduced from more than 90 days to ± 60 days.

In conclusion we can say that although the required non-polio AFP rate of 1 per 100.000 children has not been reached yet, a slow but steady increase has been reported over the years from 0.39 in 1995, to 0.56 in 1996 and 0.63 in 1997. Furthermore, due to the implementation of recommendations made in previous reports, progress has been made for all performance criteria used by WHO in the certification process. Therefore, we suggest to continue the implementation of recommendations including the extension of the system to neurologists and a further improvement in the efficiency of the system. The need for adequate and timely faecal sampling should continued to be stressed as well as the timely provision of case-specific information. Finally, once again, all paediatricians and neurologists are kindly requested to report all AFP cases (including GBS) and guarantee the collection of 2 stool samples.

SAMENVATTING

Surveillance van acute slappe verlamming (Acute Flaccid Paralysis) blijft een van de belangrijkste peilers van het mondiale polio-eradicatie programma van de Wereld Gezondheidsorganisatie (World Health Organisation/WHO). Sinds oktober 1992 wordt de surveillance van AFP in Nederland uitgevoerd via het Nederlands Signalerings-Centrum Kinder-geneeskunde (NSCK), een activiteit van de Nederlandse Vereniging voor Kindergeneeskunde die is ondergebracht bij TNO Preventie en Gezondheid in Leiden. De NSCK registratie maakt gebruik van een systeem van aktieve terugrapportage om zo zeldzame aandoeningen in de populatie jonger dan 15 jaar te 'monitoren'. Het AFP-project waarin van alle gerapporteerde gevallen met behulp van vragenlijsten gegevens verzameld worden (zowel klinische als laboratorium gegevens alsook informatie betreffende vaccinatiestatus en restverschijnselen 60 dagen na het ontstaan van de klachten), wordt uitgevoerd door het RIVM. Bovendien worden alle kinderartsen zo snel mogelijk na de melding telefonisch benaderd door het RIVM om aandacht te vestigen op het belang van adequate virologische diagnostiek, in dit geval het verzamelen van 2 faeces-monsters. Zowel de algemene respons van de kinderartsen die meewerken aan het NSCK systeem (91% voor 1997), als de volledigheid van verzamelde achtergrondgegevens (100% in 1997) is hoog. Toch blijft de geobserveerde AFP-rate in Nederland achter, wat mogelijk veroorzaakt wordt door selectieve respons voor de verschillende aandoeningen opgenomen in het NSCK systeem.

Surveillance van AFP moet volgens de WHO aan stringente criteria voldoen voor de uiteindelijke certificering van Nederland als polio-vrij. De resultaten voor 1997 met betrekking tot de belangrijkste criteria zijn als volgt:

1. Een non-polio AFP-rate (indicator voor de sensitiviteit van het surveillance systeem) voor Nederland van 0.63 werd gevonden in 1997 (doel: non-polio AFP-rate $\geq$ 1 per 100.000).
2. Virologische diagnostiek werd in 1997 in 77% van de gevallen uitgevoerd. Hoewel echter in slechts 54% van de gevallen het faecesmonster binnen 14 dagen na het ontstaan van de klachten werd verzameld. Dit is een vooruitgang ten opzichte van de situatie in 1995/1996 toen in slechts 58% van de gevallen een faecesmonster werd verzameld waarvan slechts 31% van de monsters afgenomen werd binnen de vereiste 14 dagen. Omdat van alle gevallen slechts 1 faecesmonster werd verzameld, wordt hiermee niet voldaan aan het criterium van adequate virologische diagnostiek volgens de WHO-standaard.
3. In 1997 werd 90% van de gerapporteerde gevallen tijdig (binnen 48 uur na het begin van de klachten) nader onderzocht; bovendien was voor alle gemelde gevallen de eventuele aanwezigheid van restverschijnselen na 60 dagen bekend.
4. In 1997 werd ook een duidelijke verbetering gesignaleerd in de tijd die benodigd is voor het dataverzamelingsproces. De tijd tussen het eind van de maand waarin de eerste symptomen bij de patient gesignaleerd werden en het ontvangen van de ingevulde vragenlijst op het RIVM werd gereduceerd van meer dan 65 dagen naar $\pm$ 44 dagen.

Hoewel de jaarlijkse AFP-rate voor Nederland nog niet het vereiste minimale niveau van 1 per 100.000 kinderen jonger dan 15 jaar haalt, is er wel een stijgende lijn waarneembaar voor de AFP-rate in Nederland, van 0.39 in 1995, naar 0.56 in 1996 en 0.63 in 1997. Bovendien blijkt dat de aanbevelingen die na eerdere evaluaties gedaan zijn tot een verbetering hebben geleid; dit blijkt bij toetsing aan de overige WHO 'performance criteria'. Indien Nederland aan zijn internationale verplichtingen wil voldoen, zijn echter nog steeds extra inspanningen

noodzakelijk. Behalve verdere aanpassingen aan het systeem (o.a. uitbreiding van het systeem naar neurologen, verbeteren efficiëntie van het systeem) wordt er wederom een dringend beroep gedaan op de kinderartsen om zo compleet mogelijk melding to doen van alle gevallen van AFP (inclusief het Guillain Barré syndroom) en er zorg voor te dragen dat er van elke patiënt 2 faecesmonsters worden onderzocht op enterovirussen.

1. INTRODUCTION

1.1 Eradication of polio

In 1988, the World Health Assembly committed the World Health Organisation (WHO) to the global eradication of poliomyelitis by the year 2000[1]. The polio initiative defines eradication as the definitive interruption of the transmission of all wild polioviruses. This objective will be achieved once the very last confirmed case of polio has been seen, ideally before December 31, 2000. However, because the last case can only be defined retrospectively, each WHO region will have to wait another 3 years before it can be reasonably sure that the last case was in fact the last. During those 3 years, surveillance needs to be intensified, laboratories will check the stools of children with AFP and may even analyse sewage and waste water in some places, and of course routine immunisation with polio vaccine will continue unabated. At the end of those 3 years, if no wild poliovirus has been sighted, a special independent commission will certify that polio has been eradicated from that region. After all the regional commissions have certified eradication, a global commission will, if it is satisfied that no new cases of polio have occurred during an as yet unspecified period of time, declare the world free of polio. Global certification will probably not take place before 2004. The goal beyond eradication is in a sense the ultimate goal of vaccination: to make vaccination redundant. Stopping polio immunisation is the ultimate goal of the polio eradication initiative. Most experts agree that before stopping immunisation more research has to be done and for polio immunisation to stop, everybody has to stop using the live oral polio vaccine at the same time to make sure there's no more poliovirus, wild or vaccine-derived, around. There is consensus that immunisation could not be stopped before 2007. When it does stop though, the world, according to one estimate made by WHO, will start saving every year the $1.7 billion it has been paying to prevent and treat polio.

The success of the initiative has been well documented. Since the start of the initiative 10 years ago reported case numbers have fallen world-wide from 35,251 in 1989 to 3,997 in 1997, a 89% decline. Furthermore, in 1988 polio was still circulating on all continents. Today, one WHO region, the Americas, is completely free of polio and two others, the Western Pacific and Europe are close to being free[2,3].

The European region has made substantial progress towards the goal of eradicating poliomyelitis by the year 2000[4]. Regional achievements for 1997 included the reduction of reported incidence to a very low level; all but two of the European region's 51 countries reported zero cases of polio last year, the two being Tajikistan (1 suspected case) and Turkey (6 confirmed cases); the improvement in the quality of surveillance with an overall AFP-rate of 1.1 per 100,000 under 15 years of age, and the proportion of cases with adequate stool samples having risen to 69%[5]. The certification process started for 34 non-endemic countries in the European region. Four trial countries - including the Netherlands - have been assessed in April 1998.

1.2 Strategies of the WHO polio eradication initiative

The strategy, which is modelled on the tactics used by the Pan American Health Organization (PAHO) to rid the Americas of polio seven years ago, consists of 5 components[6]. The first is

maximum coverage with routine immunisation (at least 80% of the population). The second is to implement supplemental immunisation activities ((sub)National Immunisation Days, mopping-up vaccination campaigns), and the third is to build an effective surveillance system. Two additional components, not part of the 'official list', are fund-raising and garnering political support, and co-ordination and synchronisation of the many, varied activities and actors involved in the polio initiative.

Routine immunisation

Routine immunisation with three doses of oral polio vaccine is reaching about 82% of the world's 134 million infant population. The 82% is however a world average with some countries and some parts of large countries not having achieved a 50% immunisation coverage[3]. In the Netherlands routine immunisation with a sequential schedule of 6 doses of IPV is reaching about 97% of children below the age of 1 year. The Dutch immunisation programme has always been based on the use of IPV. OPV is only made available for those families from the Orthodox Protestant Church prepared to accept vaccination during outbreaks. Communities that refuse immunisation have been the focus for polio outbreaks in the 1970s and 1990s. This distinct epidemiological group provides a high-risk population for polio. However, although there was evidence of wide-spread transmission of wild virus in the unvaccinated population in these outbreaks, there was no transmission amongst individuals immunised with IPV[7,8]. Seroprevalence studies have demonstrated high population immunity in the general population. A large-scale seroprevalence study (over 10,000 samples) conducted in 1995 will provide more detailed information[9].

Supplemental immunisation activities

Successful mass vaccination campaigns in polio endemic countries resulted in a 90% decline in reported cases world-wide between 1988 and 1997, with the virus now being restricted to sub-Saharan Africa and South Asia[3]. Supplemental immunisation activities aimed to reach those children who have never been reached by any form of health care, will be required for several years to achieve poliomyelitis eradication in most polio endemic countries.

Surveillance

The most challenging part of the strategy for polio eradication is high-quality surveillance to detect wild poliovirus circulating in the population. Surveillance is conducted for Acute Flaccid Paralysis (AFP), a major symptom of polio, as well as of certain other conditions, including Guillain-Barré syndrome, transverse myelitis and infection by enteroviruses other than poliovirus (non-polio AFP). There are three major criteria for AFP surveillance as proposed by WHO. One is the detection and reporting of cases of AFP. Even in the absence of polio, countries should detect at least 1 per 100,000 cases of non-polio AFP in children under 15 years of age. This non-polio AFP rate is a measure of the sensitivity of surveillance, in other words, of the ability of a country's surveillance system to detect a polio case if it were to occur in the population. The second criterion being the timeliness of reporting and the third criterion being the quick and accurate determination whether stool samples taken from a child with AFP contain poliovirus, and if so whether it is 'wild' or comes from the vaccine. A world-wide network of laboratories has been established for this purpose. To know whether a case of AFP is due to wild poliovirus, adequate stool specimens should be collected from each case and then sent to a WHO-accredited laboratory. Specimens should be collected during the heaviest period of poliovirus shedding, which is during the 14 days following the onset of paralysis. The target is adequate specimens from at least 80% of AFP cases.

Progress has been made on all fronts of the surveillance scene. Last year, at least 45 countries- 10 more than in 1996- reached the minimum non-polio AFP rate of 1. World-wide, the average rate was 0.89, up by 50% from 0.58 in 1996. In 1997, for the first time the Western Pacific region reached and exceeded the 80% stool sample collection rate (with 84%, vs. 79% in 1996), and Europe moved closer (73%, up from 68%)[3].

In the Netherlands AFP surveillance started in October 1992 and is an activity of the Dutch Paediatric Association. The system is based on monthly reporting (cards) from paediatricians of cases seen in the preceding calendar month. Compliance with the scheme is high although disease-specific compliance might be lower[10]. Reporting of AFP for example is still lagging behind with AFP rates of 0.39 for 1995 and 0.53 for 1996 for the population under 15 years of age. A stool sample was collected for 58% of the total amount of cases reported in 1995 and 1996, although only 31% of the samples were taken within 14 days following the onset of paralysis[11]. The laboratory of the National Institute of Public Health in the Netherlands has been fully accredited as one of the 4 specialised regional reference laboratories.

Although it might be difficult to establish satisfactory surveillance of AFP in countries where polio apparently has disappeared, AFP surveillance remains the preferred means of data collection supporting certification. This was stated by the Regional Commission for the Certification of Elimination of Poliomyelitis from the European Region, during the fifth meeting of the Commission which was held at the WHO Regional Office in Copenhagen, April 27-29 1998[5]. The commission acknowledged the fact that countries from which polio has been absent for one or even two or more decades may have good reason to seek surveillance techniques other than AFP surveillance since this is likely to be of much lower sensitivity in such circumstances than techniques such as enterovirus surveillance. However, when alternative surveillance techniques are to be used, full descriptions and estimates should be made of their sensitivity and specificity for detection of wild polioviruses.

1.3 Objectives

The main reasons for the RIVM to continue their participation in the AFP-surveillance within the NSCK network are the same as in previous years[11,12]:

1. to evaluate the system for AFP-surveillance in the Netherlands;
2. to estimate the annual incidence of AFP in the Netherlands; and
3. to obtain information on the causes of AFP in the absence of poliomyelitis.

Part of the evaluation process is to determine to what extent the recommendations made in previous reports have been followed up and if so, if it has resulted in a (significant) improvement of the AFP surveillance in the Netherlands. Recommendations made in previous reports are summarised below:

- to inform paediatricians again on the prerequisites of the system and the necessary changes in order to meet the performance criteria set by WHO
- to add initial reporting by phone (followed by monthly reporting on a card)
- to stress the need of faecal sampling
- to extend the surveillance system by including neurologists
- to review the questionnaire and add questions on definite diagnosis and follow-up information.

2. SURVEILLANCE OF AFP

Knowing where polio may still be circulating is crucial to the polio eradication initiative. Surveillance for both acute flaccid paralysis cases and wild polio viruses forms the basis of the documentation needed for certification as a polio-free country. The regional commission must be satisfied that, if polio cases had occurred, they would have been detected, reported and rapidly and thoroughly investigated. Performance indicators for surveillance have been established by WHO to help confirm this.

2.1 Acute Flaccid Paralysis

The AFP syndrome is characterised by the rapid onset of weakness of an individual's extremities, often including weakness of the muscles of respiration and swallowing, progressing to maximum severity within 1-10 days. The term 'flaccid' indicates the absence of spasticity or other signs of disordered motor system[13].

The case definition for a suspected case of polio as used by WHO is:

A case of suspected polio is defined as acute, flaccid paralysis in a child aged < 15 years including Guillain-Barré Syndrome; or any paralytic illness in a person of any age when polio is suspected.

AFP cases occur at all ages, due to causes other than polio. The AFP syndrome can occur in the course of:

I Acute poliomyelitis caused by
1. wild poliovirus or reverted attenuated poliovirus
2. other enteroviruses

II Acute myelopathy caused by
1. a space occupying process, e.g. paraspinal abscess, tumour or hematoma
2. idiopathic acute transverse myelopathy

III Peripheral neuropathy caused by
1. Guillain-Barré Syndrome (GBS)
2. acute demyelinating neuropathy
3. acute axonal neuropathy
4. neuropathies in the course of infectious diseases such as diphteria, Lyme disease, borreliosis and rabies and in the course of intoxication's with heavy metals and biological toxins

IV Systemic diseases caused by
1. acute intermittent porphyria
2. critical illness neuropathy

V Disorders of neuromuscular transmission due to
1. myasthenia gravis
2. snake bite
3. botulism
4. insecticide intoxication
5. tick paralysis

VI Disorders of the muscle due to
1. idiopathic inflammatory myopathy (polymyositis)
2. trichinosis
3. hypokalemic and hyperkalemic paralysis, including familial periodic paralysis

2.2 Criteria for certification

Surveillance for acute flaccid paralysis must meet four stringent criteria before certification can be considered:

1. Surveillance should be sensitive enough to detect at least on case of AFP for every 100.000 children under the age of 15;
2. Adequate stool samples should be collected from at least 80% of AFP cases (i.e. two stool samples should be taken 24-48 hours apart within 14 days of the onset of paralysis);
3. Detailed investigation of suspected polio cases should include clinical, epidemiological, and virological examination as well as a follow-up examination for residual paralysis after 60 days; a final classification of the case should be made by a committee of experts on the basis of these examinations;
4. At least 80% of monthly surveillance reports (including zero reporting) should be submitted on time.

3. METHODS

The background of AFP surveillance in the Netherlands, how the surveillance system works and the results for 1992-1994[12] and for 1995-1996[11] have been described in more detail in previous reports. A short summary is given below.

3.1 AFP surveillance in the Netherlands

Background
The last polio epidemic (polio type 3) in the Netherlands occurred in 1992/1993 with a total of 71 cases (18 cases in children below the age of 15)[7]. Since the nation-wide polio epidemic in 1978 (polio type 1), no indigenous case of poliomyelitis had occurred in the Netherlands[8]. In the Netherlands, poliomyelitis is a notifiable disease of group A, which means that immediate reporting at suspicion is compulsory. Since 1992, this passive polio surveillance system has been extended with a more active surveillance approach. At that time (October 1992) the 'Dutch Paediatric Surveillance Centre' (Nederlands Signalerings-Centrum Kindergeneeskunde, NSCK) started a paediatric surveillance system using a more active surveillance approach to monitor rare disorders in the child population. Fortunately, the survey on AFP has been included since the beginning.

How the surveillance system works
The surveillance scheme involves the active reporting by paediatricians of children affected by AFP or any of the other conditions currently included in the reporting system. Participants in the reporting system include paediatricians (a total of ± 400) who are either working in general hospitals (± 358) or in academic hospitals (± 57). Each month, all those participating in the system receive a monthly card listing a limited number of disorders, including AFP. Case definitions of the conditions listed on the card are also circulated. The academic hospitals have each nominated specific personnel to respond for separate disorders and to be responsible for reporting all cases in that hospital. Respondents are asked to return the card to the NSCK secretariat at the end of the month, indicating the number of new cases of each condition on the card which they have seen during the preceding calendar month, and to report the patient's initials and date of birth. Participants are expected to return cards even if they have no cases to report - there is a 'no observations' option on the card. In this way non-responders can be identified and followed up.

The case definition for AFP used in the NSCK system is as follows: A child with acute flaccid paralysis, including bulbar paralysis.
As soon as a case of AFP is reported by the paediatrician, the NSCK informs the research team at the RIVM by fax. The reporting clinician is contacted by phone as soon as possible to check whether a stool sample has been taken already. If not, the paediatrician is urged to take a stool sample (both procedures - fax and phonecall - were introduced in 1997).
Subsequently, cases are compiled at the end of the month and sent to the RIVM who contacts the reporting clinician for further information on the case (initial questionnaire on clinical and laboratory findings and vaccination status, sometimes - depending on the time went by since the onset of symptoms - followed by a questionnaire on residual signs) (annex 1, 2). Those who do not respond within 4 weeks are reminded by telephone. The surveillance scheme used in the AFP project on is presented in the box below.

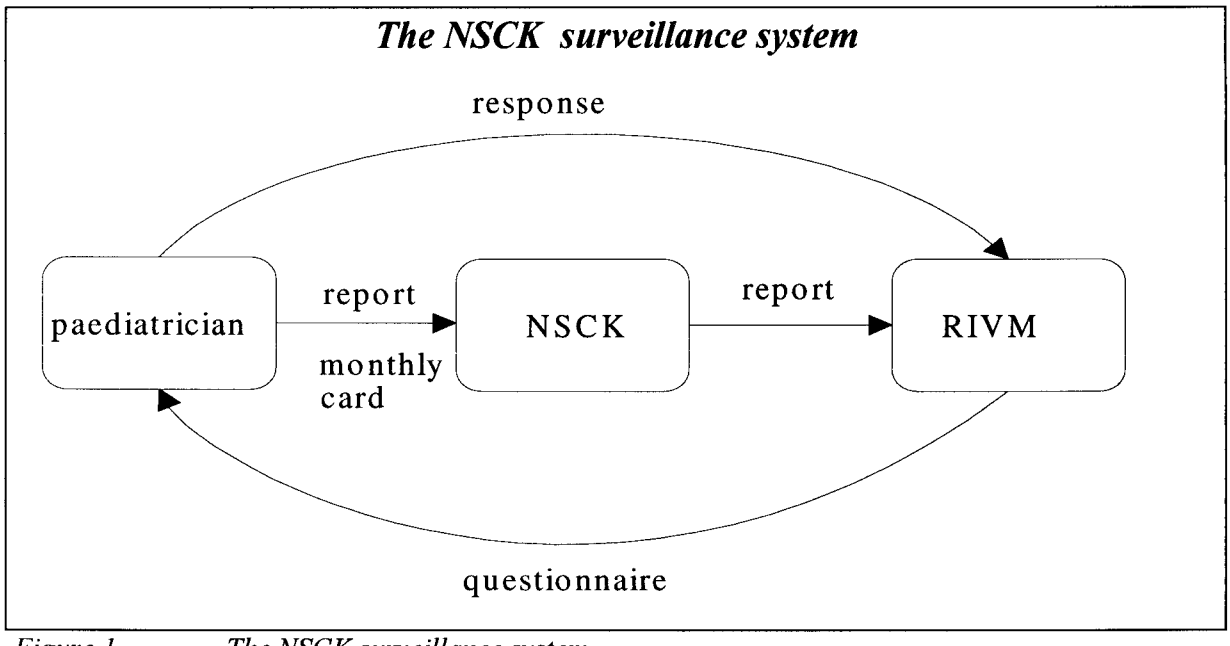

Figure 1 *The NSCK surveillance system*

The overall response rate for the NSCK surveillance system has risen from 83% in 1992 to 91% in 1997[14]. For more details on the NSCK system please refer to the annual reports[10].

4. RESULTS

4.1 Response

In 1997 the RIVM has received 27 notifications of AFP from the NSCK. Of these, 4 cases referred to 1996, 3 are known to be errors in reporting and 1 child has been reported twice. Of the remaining 19 cases, 13 replies of paediatricians have been received, a 69% completion rate. Unfortunately 1 questionnaire could not be completed because the child was moved to another hospital and could not be traced back. The remaining 6 cases were however notified by the same paediatrician who had been reminded to complete questionnaires on several occasions. Because these 6 cases form a substantial part of the reported cases for 1997 and because they were all reported by the same paediatrician special efforts have been made by the research team to increase the completion rate for 1997 to 100%. The research team asked permission from the reporting paediatrician to visit the hospital in October 1998 to complete the questionnaires on the spot using the patients' records.

The remainder of 18 cases (12+6) of AFP for 1997 supplemented with 1 additional case from 1996 which has not been included in previous analyses (of the 4 cases referring to 1996, 2 have been reported previously[11] and 1 turned out to be a reporting error), were included in the analysis.

Table 1 Reported cases of AFP, 1995-1997

	1995	1996	1997
Reported cases	13	19	27
Reported cases excluding errors in reporting and duplicate reports	13	16	19
Questionnaires returned	12	15	13 (+6)
Completion rate	92%	94%	(69% -) 100%
Cases for evaluation: meeting the case definition and with a complete data set	11	15	12 - 18 (+ 1 for 1996)

As can be seen from the table, the number of notified cases excluding errors in reporting (arising as a result of a misdiagnosis, the wrong box on the card being ticked, the case not meeting the diagnostic criteria or an inability to follow up the case) and duplicate reports shows a slow but steady increase over the years, from 13 to 19. The initial completion rate for 1997 of 69% has been increased to 100% through special efforts made by the investigators.

4.2 Timeliness of reporting

The time taken to follow up a case report varies greatly. Of the 19 AFP cases included in the analysis, 12 were reported by the paediatrician to the NSCK at the end of the month in which the first symptoms occurred, 5 were reported at the end of the following calendar month, 1 case was reported after 2 months and 1 case was reported 3 months after the first symptoms.

In the remaining analyses to assess the timeliness of reporting, the 6 patients whose questionnaires were completed afterwards by one of the investigators were excluded because

the reporting hospital refused to follow standard reporting procedures for data collection as described in the study protocol. Thirteen cases have been included in the analysis.

The different steps in the data collection process and the time (median) taken to complete the steps are listed in table 2. For comparison, both data for 1995/96 and 1997 are presented.

Table 2 Time used to complete the different steps of the data collection process (N=13)

Data collection process		Time used to complete steps median (range)	
		1995/96	1997
1	(Month of) first symptoms		
↓ (step 1-2)		0 (0-4) months	0 (0-3) months
2	Paediatrician reports case to the NSCK (month of reporting)		
↓ (step 2-3)		--	13 (5-43) days
3	NSCK informs RIVM by fax		
↓ (step 3-4)		--	1 (0-5) days (4 cases unknown)
4	RIVM contacts paediatrician to check on collection of stool sample(s)		
↓ (step 2-5)		31 (7-113) days	16 (6-90) days
5	NSCK sends compiled information to RIVM on a monthly basis		
↓ (step 5-6)		6 (0-18) days	2 (0-12) days
6	RIVM sends initial questionnaires out to paediatricians		
↓ (step 6-7)		14 (2-89) days	9 (4-112) days
7	Receipt of questionnaires at the RIVM		
Time passed between step 1 and step 5		65.5 (23-166)	44 (22-150)
Total time used to complete the process		**91.5 (40-189)**	**61 (31-185)**

As can be concluded from the table, considerable progress has been made to speed up the process of data collection. The median number of days it took the NSCK to inform the RIVM has been reduced with 50%, from 31 days to 16 days. The time needed by the RIVM to send out the questionnaires to the paediatricians has been reduced to one third, from 6 days to 2 days. Furthermore, the time delay between sending and receiving completed questionnaires has also been shortened from 14 to 9 days.

Two additional steps were introduced in the process of data collection in 1997. In the first place the NSCK was expected to inform the researchers at the RIVM by fax as soon as a suspected case of AFP was reported to them. Secondly, the RIVM was supposed to contact all reporting paediatricians by phone to check whether a stool sample had been taken. A median number of 13 days elapsed between the end of the month in which the case was reported by the paediatrician and the fax sent to the RIVM by the NSCK. In 50% of the cases the paediatrician was contacted by the RIVM the same day or the day after.

The total time used to complete the whole process of data collection has been reduced with one third, from more than 90 days to ± 60 days. Of the 30 days gained in the process, ± 20

could be attributed to an increase in efficiency at the side of the NSCK, the paediatricians account for 6 days and the RIVM for the remaining 4 days.

4.3 Characteristics of AFP cases

A line-listing of all reported AFP cases is given in annex 5. The age and sex distribution of the cases are given by diagnosis in table 3.

Table 3 Characteristics of AFP cases (N=19)

Diagnosis	Number of cases	Sex (M/F)	Median age in years (range)
Guillain-Barré Syndrome	9	5/4	5 (2-15[1])
Cerebral infarct	6	3/3	1.5 (1-4)
Myositis	1	0/1	3
Angiomatosis	1	1/0	4
Alternating hemiplegia	1	1/0	9
Unknown	1	1/0	1
TOTAL	19	11/8	4 (1-15)

1= one case who developed symptoms 2 days after his 15th birthday has been included

As could be expected the majority of the cases were diagnosed with the syndrome of Guillain-Barré (47%). In six cases the paralysis was caused by a cerebral infarct and three other children suffered from myositis, angiomatosis and alternating hemiplegia of childhood respectively. The final diagnosis was unknown for 1 case.

The 19 cases ranged in age from 12 months to 15 years of age (median age of 4 years) and 74% were aged 5 years or less. Eleven (58%) of the cases were males and 8 (42%) were females.

The frequency of the different symptoms reported for the AFP cases is listed in table 4. Residual weakness 60 days after the onset of symptoms was present in 15 of the 19 cases, 8 of them diagnosed with Guillain-Barré Syndrome.

Table 4 Symptoms reported for AFP cases (N=19)

Diagnosis	N	Symptoms					
		Fever	Weakness of limbs	Weakness of respiratory muscles (bulbar)	Meningism	Sensibility changes	Residual weakness at 60 days
Guillain-B	9	2	9	1	2	3	8
Cerebral infarct	6	1	6	0 (1 unknown)	0 (1 unknown)	0 (2 unknown)	5
other	3	1	3	0	1	2 (1 unknown)	1
unknown	1	1	1	-	-	?	1
Total	19	5	19	1	3	5	15

4.4 Vaccination history

Eighteen children (95%) had received age-appropriate polio immunisation. For 1 child no information was obtained on the immunisation status.

4.5 Virological examination

Again, the six cases for whom standard procedures of data collection were not followed were excluded in the analysis. However, they will be described separately below.

Stool investigation for isolation of poliovirus or non-polio enteroviruses was reported for 10 of the 13 cases (77%) included in the analysis. For all 10 cases one stool sample was taken, 7 of them (54%) within 14 days after the onset of paralysis (median number of days = 8, range 0-74 days). For 2 cases a considerable time delay of 59 respectively 74 days was reported. For 1 case the time the stool sample was taken was unknown. No poliovirus or other enterovirus was isolated in any of the samples.

Of the 10 cases who had stool investigation, five had additional throat and/or cerebrospinal fluid viral culture reported, all with negative results for poliovirus and other enteroviruses. Polio-specific serological investigation was reported for 1 case; however, the results are unknown.

Of the 6 cases excluded in the analysis as described above, virological investigation was carried out for 5 of the cases. Stool investigation was reported for only 1 case (positive for adenovirus), but all five cases had additional throat and/or cerebrospinal fluid viral culture reported, all with negative results for poliovirus.

Summarised, virological investigation was carried out in 77% of the cases. Stool investigation for potential isolation of poliovirus was reported for all of these cases (1 stool sample taken), however in only 54% of the cases the stool sample was taken within 14 days after the onset of paralysis. A step forward to the goal of 80% (of adequate stool samples for all AFP cases) as compared to the data for 1995/96, when a stool sample was taken in 58% of the cases with only 31% of the samples taken within the time-limit of 14 days.

4.6 AFP-rate

The annual AFP-rate - calculated as the number of cases (according to first day of illness) meeting the case definition per 100,000 persons younger than 15 years old - for 1997 was 0.63. The AFP-rate calculated for 1995 was 0.39 and the corrected AFP-rate for 1996 is 0.56 (including the 1 case for 1996 reported in 1997). The AFP-rate represents the cumulative incidence of AFP in children up to the age of 15.

The denominator figures used for this calculation are obtained from the Central Bureau of Statistics[15].

5. DISCUSSION

The process of certification of poliomyelitis eradication of European countries has now begun, with the Netherlands as one of the four trial countries. Although it might be difficult to establish satisfactory surveillance of AFP in countries where polio apparently has disappeared, AFP surveillance remains the preferred means of data collection supporting certification. This was stated by the Regional Commission for the Certification of Elimination of Poliomyelitis from the European Region, during the fifth meeting of the Commission which was held at the WHO Regional Office in Copenhagen, April 27-29 1998[5]. The commission acknowledged the fact that countries from which polio has been absent for one or even two or more decades may have good reason to seek surveillance techniques other than AFP surveillance since this is likely to be of much lower sensitivity in such circumstances than techniques such as enterovirus surveillance. However, when alternative surveillance techniques are to be used, full descriptions and estimates should be made of their sensitivity and specificity for detection of wild polioviruses.

In the Netherlands clinical surveillance (mandatory notification of suspected cases of poliomyelitis and AFP surveillance), together with virological surveillance (diagnostic examinations of suspected cases of poliomyelitis and AFP, enterovirus surveillance and environmental surveillance) and immuno surveillance form the basis on which the country would be certified as a polio-free country[16]. These three types of surveillance have to provide the evidence to convince the WHO regional commission that there has been no circulation of wild virus of poliomyelitis for at least three years. As AFP surveillance remains the 'gold standard' according to WHO, it seems inevitable to continue our efforts to improve AFP surveillance in the Netherlands. Besides this, efforts can be made to document the estimates for sensitivity and specificity for the other surveillance methods used.

Since October 1992, surveillance for AFP has been established in the Netherlands as part of the NSCK surveillance system. The NSCK surveillance system is an activity of the Dutch Paediatric Association and is using an 'active' surveillance approach to monitor rare disorders in the child population. Compliance with the scheme in general is high (91% in 1997) but reporting of AFP is still lagging behind. The **non-polio AFP rate** for the Netherlands (an indicator for the sensitivity of the surveillance system) is still at a low level, although a slow but steady increase has been reported over the years from 0.39 in 1995, to 0.56 in 1996 and 0.63 in 1997 (target: non-polio AFP rate of ≥ 1 per 100.000). Although progress has been made in **first stool sample collection rate,** up from 58% in 1996 to 77% in 1997 with 54% of the samples taken within 14 days after the onset of paralysis (31% in 1995/1996), adequate stool sampling and testing according to WHO criteria was not completed in any of the cases. This is because the **second stool sample collection rate** for 1997 is still at 0% (!).The testing of stool samples may seem unnecessary for all AFP cases, but remains an essential requirement for WHO certification. The **60-day follow up examination** is not explicitly included in the surveillance scheme but it is normal clinical practice for AFP cases to return for follow-up examinations. For 1997, information regarding the presence of residual paralysis at 60 days was available for all reported AFP cases. During 1997 the questionnaire which is being used has been amended to include for example questions on the onset of symptoms and the date of hospitalisation. In this way an estimate could be made for the **number of reported AFP cases which have been investigated within the required 48 hours**. For the 10 cases where the amended questionnaire was used,

90 % were adequately and timely investigated, meaning within the required 48 hours after the onset of paralysis. Furthermore, considerable progress has been made in the **timeliness of reporting**. The time delay between receipt of the report at the RIVM and the end of the month of first symptoms has been reduced from more than 65 days to 44 days. A further improvement in the efficiency of the system could be achieved if the RIVM were allowed to send out the questionnaire as soon as they have been notified by fax by the NSCK, instead of waiting for the report. On average the NSCK contacted the RIVM within 2 weeks following the end of the month of first symptoms, resulting in a further time gain of ± 30 days. This would still not make the AFP surveillance system suitable as a tool for rapid detection of suspected polio cases, but would certainly benefit the system of data collection, and facilitate the completion of questionnaires for the paediatricians.

The exact reasons for the low non-polio AFP rate of the Netherlands are not clear, although it might be reassuring to know that similar, low non-polio AFP rates and problems with the uptake of adequate stool testing have been reported in other European countries (Switzerland[18], United Kingdom[19]), Australia[20] and Canada[21], all using a paediatric surveillance system for the surveillance of AFP. The coverage of the Dutch surveillance system does not seem to be the problem because compliance with the scheme is high (> 90%) as well as the completion rate (100% for 1997). However, compliance with the NSCK scheme might differ for the different conditions listed. The presumed underreporting of AFP cases has been illustrated previously, when data obtained by the NSCK system were compared to AFP data obtained through a system based on the registration of hospital admissions (Stichting Informatiecentrum Gezondheidszorg - SIG) [22]. Substantial underreporting was demonstrated when comparing the different systems (see tabel 5).

Table 5 Number of cases of acute infectious polyneuritis (including GBS) and acute poliomyelitis as registered by the SIG (separated for main and secondary diagnosis: m/s), and the number of cases of AFP as registered by the NSCK

Source	Diagnosis	Age (yr)	Number / year 1992	1993	1994	1995	1996
SIG	Acute infectious polyneuritis	0-15(m)	26	30	39	23	34
	(including GBS)	0-15(s)	?	?	?	3	2
	Acute poliomyelitis	0-15(m)	24	0	0	1	0
		0-15(s)	4	0	0	0	0
NSCK	AFP	0-15	10*	23	19	11	15

*= October-December; including 7 confirmed cases of polio

In the case of AFP surveillance, health professional resistance to implementing full AFP surveillance might be a problem. Although WHO has suggested that in this case a proxy might be possible in using surveillance for conditions such as GBS or transverse myelitis (with some adjustments made for the surveillance indicators), in our case the surveillance system indicates a limited sensitivity for the detection of GBS as well. This is illustrated by the fact that we should at least detect ± 44 cases of GBS each year (based on a study in the USA[17] where an incidence for GBS of 1.5/100.000 was found), a substantial difference with the reported number of 9 cases of GBS for 1997.

6. CONCLUSIONS AND RECOMMENDATIONS

Overall the performance of AFP surveillance remains at a low level in the Netherlands although progress has been made for all performance criteria used by WHO in the certification process. Furthermore, as a result of amendments made in the original questionnaire estimates for two additional criteria could be obtained for 1997. The performance of the Dutch AFP surveillance system with regard to the WHO performance criteria is summarised below.

Table 6 AFP surveillance in the Netherlands according to the WHO performance criteria

WHO performance criteria	1995/96 results	1997 results	Comments
Completeness of reporting (target: return of monthly card ≥ 90%)	> 90%	> 90%	High participation of paediatricians although disease-specific compliance might be lower
Timeliness of reporting (target: receipt of cards at end of the month of first symptoms ≥ 80%)	65%	63% (12/19)	
non-polio AFP-rate < 15 yrs (target: ≥ 1/100.000)	1995: 0.39 1996: 0.56	0.63	
Adequate stool specimen collection: - first stool sample collection rate (target: within 14 days after onset) - second stool sample collection rate (target: 24-48 hours after 1st sample)	 31% 0%	 54% 0%	Stool investigation was reported for 77% of the cases in 1997, up from 58% in 1995/1996.
Follow-up at 60 days (target: reported AFP cases with a follow-up exam at least 60 days after paralysis onset ≥ 80%)	unknown	100%	All cases had a follow-up exam ≥ 60 days; residual weakness in 79% of the cases
Case investigation ≤ 48 hours (target: ≥ 80%)	unknown	90%	9 of the 10 cases using the amended questionnaire were admitted to hospital ≤ 48 hours

Although not all recommendations made in previous reports have been followed up yet, the ones which have been implemented have resulted in an improvement of the system. Paediatricians have been re-informed in several ways: through the regular newsletter of the Dutch Paediatric Association (annex 4), a letter sent by the Inspectorate of Health and a scientific article addressing the issue of AFP surveillance by the National Certification Committee for Poliovirus Eradication published in a Dutch Medical Journal (het Nederlands Tijdschrift voor Geneeskunde) (annex 5). All paediatricians reporting a case of AFP have been contacted by telephone to stress the need of faecal sampling and the questionnaire has been amended.

We suggest to take further action on the implementation of the recommendation to include neurologists in the surveillance system. So far, in university hospitals (and probably in some other hospitals as well) paediatricians made agreements concerning AFP surveillance with their fellow neurologists. However, in some cases the neurologists are prepared to report cases of AFP but are not willing to complete questionnaires for additional information on the cases. This was the case for the 6 patients for which additional information was obtained by

the investigators. Furthermore, the efficiency of the system could be further improved if the RIVM were allowed to send out the questionnaire to the paediatricians as soon as they have been notified by fax by the NSCK, instead of waiting for the report. The NSCK did not agree on the reporting of AFP cases by telephone because the feasibility of reporting by telephone seemed questionable. Because high-quality AFP surveillance is essential in the certification process, the need for adequate and timely faecal sampling should continued to be stressed. Emphasis will be on the adequate and timely collection of the first stool sample. Collection of a second stool sample within 48 hours is considered to be a matter of secondary importance. Finally, it is recommended to circulate an up-to-date version of the AFP research protocol as a reminder.

It is important to point out that while none of the 19 cases was considered to be polio-compatible according to the investigators, the polio-specific laboratory investigations were reported for only 77% of the cases, making the assessment of polio compatibility more difficult. According to WHO's virological classification scheme (annex 6) all cases with inadequate specimen collection and residual paralysis should be classified as polio compatible, cases without residual paralysis should be subjected to an expert review to assess polio compatibility. It should be noted that evidence of the appropriate laboratory investigation of AFP cases (even with negative results) is an essential part in this surveillance system in order to properly evaluate cases to rule out poliomyelitis. The single most important laboratory specimen being a stool sample collected within 2 weeks of the onset of paralysis for virus isolation. Throat swabs are less often positive than stool samples, and virus is rarely detected in CSF.

Also important is the timely provision of case-specific information without which the cases cannot be confirmed or evaluated further. Especially, information on the vaccination history of the cases is important. It should be noted that for the majority of the cases information available on the vaccination history is based on anamnestic information only without verification of the vaccination certificate (meaning in most cases the exact dates of vaccination are unknown). If necessary, additional efforts can be made to obtain information on vaccination history of the cases at the Provincial Vaccination Administration (Provinciale Entadministratie, Dutch acronym: PEA). However, previous to that permission should be granted by the parents through a written informed consent.

It may be clear that as long as we are not able to provide high-quality AFP surveillance, our bid to be declared polio-free could be compromised.

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Annexes

Annex 1: General questionnaire

Annex 2: Questionnaire residual complaints

Annex 3: Line-listing of all reported AFP-cases

Annex 4: Article on AFP in the newsletter of the Dutch Paediatric Association

Annex 5: Article addressing the issue of AFP surveillance by the National Certification Committee for Poliovirus Eradication in 'het Nederlands Tijdschrift voor Geneeskunde'

Annex 6: WHO: virological classification of acute flaccid paralysis cases

Annex 1

VRAGENLIJST ACUTE SLAPPE VERLAMMING / BULBAIRE PARALYSE

Naar aanleiding van uw melding aan het Nederlands Signalerings-Centrum Kindergeneeskunde van een patiënt met Acute Slappe Verlamming of bulbaire paralyse, verzoeken wij u deze vragenlijst zo volledig mogelijk in te vullen.
Bij vragen kunt u contact opnemen met de onderzoeker Dr.M.A.E.Conyn-van Spaendonck, Centrum voor Infectieziekten Epidemiologie, RIVM (telefoon 030-274 30 18). Hartelijk dank voor uw medewerking.

Naam signalerende kinderarts/kinderneuroloog: .....
Naam ziekenhuis: .....

NSCK-code | A |

PERSOONSGEGEVENS VAN HET KIND MET ACUTE SLAPPE VERLAMMING

1 Eerste letter voornaam _

2 Eerste letter achternaam _

3 Geboortedatum ☐☐-☐☐-☐☐ (dag-maand-jaar)

4 Geslacht ☐ jongen ☐ meisje

5 Woonplaats .....

6 Postcode ☐☐☐☐ ☐☐

ZIEKTEGEGEVENS

7 Datum eerste symptomen ☐☐-☐☐-☐☐ (dag-maand-jaar)

8 Datum opname ☐☐-☐☐-☐☐ (dag-maand-jaar)

9 Datum ontslag ☐☐-☐☐-☐☐ (dag-maand-jaar)

10 Overzicht van symptomen

Koorts	☐ ja	☐ nee	☐ onbekend
Meningeale prikkeling	☐ ja	☐ nee	☐ onbekend
Spierzwakte ledematen	☐ ja	☐ nee	☐ onbekend
Spierzwakte bulbair	☐ ja	☐ nee	☐ onbekend
Sensibiliteitsstoornissen	☐ ja	☐ nee	☐ onbekend

Andere symptomen en nadere toelichting .....

.....

11. Welke diagnose is gesteld? .....

.....

12. Wat zijn de restverschijnselen, ...

60 dagen na de eerste ziektedag? .....

☐ geen ☐ nog niet bekend*

LABORATORIUMONDERZOEK

13. Is er virologisch onderzoek verricht op faecesmonsters? ☐ ja ☐ nee ☐ onbekend

14. Indien ja, wat was de datum van afname en de uitslag

	dag maand jaar	**uitslag**
1e onderzoek	☐☐-☐☐-☐☐	..... ☐ negatief
2e onderzoek	☐☐-☐☐-☐☐	..... ☐ negatief
3e onderzoek	☐☐-☐☐-☐☐	..... ☐ negatief

15. Is er een keelwat voor virologisch onderzoek afgenomen? ☐ ja ☐ nee ☐ onbekend

16. Indien ja, wat was de datum van afname en de uitslag

	dag maand jaar	**uitslag**
1e onderzoek	☐☐-☐☐-☐☐	..... ☐ negatief
2e onderzoek	☐☐-☐☐-☐☐	..... ☐ negatief

* *Indien nog geen 60 dagen zijn verstreken, zal U te zijner tijd nog een korte brief worden gestuurd om eventuele restverschijnselen alsnog te documenteren.*

17. Is er serologisch onderzoek naar antistoffen tegen poliovirus verricht? ☐ ja ☐ nee ☐ onbekend

18. Indien ja, wat was de datum van afname en de uitslag

	dag maand jaar	uitslag
1e onderzoek	☐☐-☐☐-☐☐	IgG . . . . . IgM . . . . . ☐ onbekend
2e onderzoek	☐☐-☐☐-☐☐	IgG . . . . . IgM . . . . . ☐ onbekend

19. Is de patiënt ingeënt tegen poliomyelitis? ☐ ja ☐ nee ☐ onbekend

20. Datum 1e vaccinatie ☐☐-☐☐-☐☐ (dag-maand-jaar)
Datum 2e vaccinatie ☐☐-☐☐-☐☐ (dag-maand-jaar)
Datum 3e vaccinatie ☐☐-☐☐-☐☐ (dag-maand-jaar)
Datum 4e vaccinatie ☐☐-☐☐-☐☐ (dag-maand-jaar)
Datum 5e vaccinatie ☐☐-☐☐-☐☐ (dag-maand-jaar)
Datum 6e vaccinatie ☐☐-☐☐-☐☐ (dag-maand-jaar)

21. Is er liquoronderzoek verricht? ☐ ja ☐ nee ☐ onbekend

22. Indien ja, wat was de datum van afname en de uitslag:

dag maand jaar	uitslag
☐☐-☐☐-☐☐	cellen . . . . . /^{3} tot-eiwit . . . . . g/l

23. Is er EMG-onderzoek verricht? ☐ ja ☐ nee ☐ onbekend

24. Indien ja, wat was de datum van onderzoek en de uitslag:

dag maand jaar	uitslag
☐☐-☐☐-☐☐	. . . . .

25. Overige opmerkingen . . . . . .

Het wordt op prijs gesteld indien u de (geanonimiseerde) ontslagbrief meestuurt.
Gaarne deze vragenlijst per omgaande retourneren in bijgesloten antwoordenveloppe of naar het RIVM, Centrum voor Infectieziekten Epidemiologie (pb75), t.a.v. Mevr.Dr.M.A.E.Conyn-van Spaendonck, Antwoordnummer 3205, 3720 FB BILTHOVEN

Annex 2

Nummer A

Patiëntje , geboren Eerste ziektedag

1. Toestand op of omstreeks
   - ☐ geheel hersteld
   - ☐ restverschijnselen

2. Indien restverschijnselen, welke?
   - ☐ paralyse, zo ja, localisatie
     - ☐ linker arm
     - ☐ linker been
     - ☐ rechter arm
     - ☐ rechter been
     - ☐ ademhalingsspieren
     - ☐ aangezichtsspieren
     - ☐ andere hersenzenuwen
     - ☐ anders, namelijk .....

3. Is er vergeleken met het moment van maximale spierslapte nog verbetering opgetreden?
   - ☐ ja
   - ☐ nee

4. Wat zijn de resterende beperkingen?
   .....
   .....
   .....

5. Opmerkingen

Dank voor uw medewerking.

REPORTED AFP CASES FOR 1997 TO BE REVIEWED

In 1997 a total of 27 cases of AFP have been notified to the NSCK :

- notifications concerning 1996: 4 cases (A93/A94 decribed in report 1995/96, A104 = error in reporting, A95 this report).
- errors in reporting: 3 cases (A103, 105 en A109) + above case for 1996 (A104)
- duplicate reports: 1 case (A97/A98)
- loss-to-follow up: 1 case (A101). patient was moved to another hospital
- Non-respons: 6 cases (A106, A107, A108, A112, A113 en A114) all notified by the same paediatrician. Questionnaires were completed on the spot by the investigators using the patients' records

Remaining 19 cases to be reviewed (including 1 case from 1996). The characteristics of the cases :

NSCK-CODE	date of birth	AGE AT ONSET OF SYMPTOMS	SEX	DIAGNOSIS	VIROLOGICAL EXAMINATION			VACCINATION HISTORY	RESIDUAL COMPLAINTS AT 60 DAYS	REMARKS
					FAECES	THROAT	LIQUOR			
A95	11.06.95	1 year	boy	unknown	1 x (neg)	1 x (neg)	not applicable	yes according to schedule	yes, no paralysis but child doesn't run	17.12.97 complete recovery
A96	06.10.86	10 years	girl	SGB	1 x (neg)	1 x (neg)	not applicable	yes according to schedule	yes, both feet are restricted in ability for elevation	
A97/98	28.11.91	5 years	girl	SGB	1 x (neg)	no	not applicable	yes dates of vaccination	yes, loss of strength in both arms and legs	september 1997 almost complete recovery
A99	08.04.93	3 years	girl	myositis	1 x (neg)	no	not applicable	yes dates of vaccination	no, complete recovery	
A100	29.12.95	1 year	boy	cerebrale infarct(en)	no	no	not applicable	yes dates of vaccination	yes, paralysis right arm and leg, treatment in a rehabilitation centre	child suffers from coeliakie

NSCK-CODE	date of birth	AGE AT ONSET OF SYMPTOMS	SEX	DIAGNOSIS	VIROLOGICAL EXAMINATION[1]			VACCINATION HISTORY	RESIDUAL COMPLAINTS AT 60 DAYS	REMARKS
					FAECES	THROAT	LIQUOR			
A102	17.07.94	2 years	boy	polyneuro-pathy/SGB	no	no	1 x (neg)	yes dates of vaccination	yes, loss of strength in right leg	21.04.98 complete recovery
A106	05.04.93	4 years	boy	angioma-tosis + epilepsie	no	no	1 x	yes according to schedule	yes, epileptic attacks + shortterm paralysis of right leg/arm	completed retrospectively using records
A107	06.10.95	1 year	boy	lacunair infarct	1 x pos adeno	1 x (neg)	1 x	yes according to schedule	yes, motor dys function left	completed retrospectively using records
A108	24.09.87	9 years	boy	alternating hemiplegia of childhood	no	no	1 x (neg)	yes according to schedule	no, complete recovery	completed retrospectively using records
A110	04.07.91	5 years	girl	SGB	1 x (neg)	no	not applicable	yes dates of vaccination	yes, paralysis right leg	child does not run, condition improves
A111	24.04.93	4 years	boy	SGB	1 x (neg)	no	not applicable	yes according to schedule	yes, paralysis both legs, problems walking and balance	
A112	21.07.93	4 years	girl	infarct	no	no	no	unknown	yes, loss of strenght right arm, problems walking, rehabilitation centre	completed retrospectively using records
A113	10.04.95	2 years	boy	infarct	no	no	1 x	yes according to schedule	yes, problems with left foot	completed retrospectively using records
A114	21.05.96	1 year	girl	infarct	no	no	1 x	yes according to schedule	yes, paralysis right leg/arm, facial paralysis, disturbed balance and speech	completed retrospectively using records

NSCK-CODE	date of birth	AGE AT ONSET OF SYMPTOMS	SEX	DIAGNOSIS	VIROLOGICAL EXAMINATION[1]			VACCINATION HISTORY	RESIDUAL COMPLAINTS AT 60 DAYS	REMARKS
					FAECES	THROAT	LIQUOR			
A115	14.04.91	5 years	boy	SGB	1x results unknown	no	not applicable	yes according to schedule	yes, paralysis both legs	
A116	07.10.94	3 years	girl	infarct	unknown	unknown	no	yes	no, none	
A117	26.11.82	15 years	boy	SGB	1 x (neg)	no	1 x	yes according to schedule	yes but unknown which	
A120	21.04.83	14 years	boy	SGB	1 x (neg)	1 x (neg)	1 x	yes according to schedule	no, none	
A121	12.10.93	4 years	girl	SGB	1 x (neg)	no	1 x	yes according to schedule	yes, areflexie right arm and both legs	following 3 hospital admissions to rehabilitation clinic

1= explanation virological examination:

Faeces: (neg) means negative for virusses, when positive (pos) the type of virus is specified.
In all other cases there is no information available

Throat swab: same as above

Liquor: The information available concerns 'cells' and 'total albumine'. Information on virusses is not availbale.
When 'not applicable' is stated it means the previous questionnaire has been used which did not ask for information on liquor.

Annex 4

Brieven aan de redactie

Polio de wereld uit, rond het jaar 2000

L.I.HERTZBERGER, J.HUISMAN EN J.B.WILTERDINK

De Wereldgezondheidsorganisatie (WHO) heeft zich ten doel gesteld de ziekte polio (poliomyelitis anterior acuta) rond het jaar 2000 uit te roeien. Daarmee zou polio de tweede infectieziekte zijn waarbij dit lukt. De eerste ziekte was pokken, waarover in een plechtige verklaring in 1980 werd gesteld dat de wereld pokkenvrij was.

Polio komt ook in ons land nog zo nu en dan voor, overigens vrijwel uitsluitend in groepen waar een lage vaccinatiegraad bestaat. Daarom wordt een dringend beroep gedaan op alle artsen in Nederland om aan de eradicatie van polio mee te werken.

De Nationale Certificatiecommissie Poliomyelitis Eradicatie.
L.I.Hertzberger, neuroloog, Merwedeziekenhuis, Dordrecht.
Prof.dr.J.Huisman, emeritus hoogleraar Technische Universiteit, Delft, en Erasmus Universiteit, Rotterdam.
Prof.dr.J.B.Wilterdink, emeritus hoogleraar Rijksuniversiteit Groningen, voorzitter van de commissie.
Correspondentieadres: prof.dr.J.B.Wilterdink, Eswal 3, 9481 TK Vries.

Op verzoek van de WHO zijn in alle landen ter wereld commissies ingesteld die de documentatie moeten (laten) opstellen op grond waarvan een land inderdaad poliovrij verklaard kan worden. Voor Nederland bestaat de commissie uit de drie auteurs van dit artikel. Als (ambtelijk) secretaris treedt op de Inspecteur voor de Infectieziekten (J.K.van Wijngaarden) van de Inspectie voor de Gezondheidszorg van het Staatstoezicht op de Volksgezondheid.

De WHO acht de volgende vier activiteiten voor het bereiken van het gestelde doel noodzakelijk:
- surveillance op basis van de wettelijk verplichte aangifte van elk ziektegeval, waarbij men denkt aan poliomyelitis (aangifte dus reeds bij vermoeden: het is een A-ziekte);
- nader klinisch en virologisch onderzoek van alle kinderen, jonger dan 15 jaar, met acute, slappe verlamming (ASV), in WHO-termen 'acute flaccid paralysis';
- laboratoriumsurveillance van poliovirusisolaten;
- surveillance van rioolwater, gericht op het vaststellen van circulatie van wild poliovirus. Deze surveillance wordt uitgevoerd op plaatsen waar veel ongevaccineerden bijeenkomen of wonen.

De eerste activiteit wordt uitgevoerd door de Inspectie voor de Gezondheidszorg en de tweede door het Nederlands Signalerings-Centrum Kindergeneeskunde (NSCK) te Leiden onder auspiciën van de Nederlandse Vereniging voor Kindergeneeskunde in samenwerking met het Rijksinstituut voor Volksgezondheid en Milieu (RIVM) te Bilthoven. De derde activiteit wordt uitgevoerd door wederom het RIVM, terwijl de laatste eveneens in handen is gesteld van het RIVM, dat hierbij nauw samenwerkt met de Inspectie voor de Gezondheidszorg.

Acute, slappe verlamming bij kinderen. Het is vooral de tweede activiteit (nader klinisch en virologisch onderzoek van kinderen met ASV) waarvoor de hulp van alle artsen zeer noodzakelijk is. De WHO heeft Nederland aangewezen als één van de voorbeeldlanden voor het certificeringsproces. Dit getuigt van een groot vertrouwen in ons land. Het is echter vooral deze ASV-surveillance die (nog) niet optimaal verloopt en de commissie dan ook enige zorgen baart (M.A.E.Conyn-van Spaendonck, schriftelijke mededeling 1998).[1]

Om aan te tonen dat de ASV-surveillance van voldoende kwaliteit is, dient een jaarlijkse incidentie van ≥ 1 : 100.000 van ASV onder kinderen tot 15 jaar te worden geregistreerd. ASV kan door verschillende oorzaken worden verklaard, waaronder een infectie met het poliomyelitisvirus. Daarom is het een eis van de WHO dat in alle gevallen van ASV een poliovirusinfectie wordt uitgesloten door adequate virusdiagnostiek, dat wil zeggen kweek van twee fecesmonsters, het eerste verzameld binnen 14 dagen na de eerste ziektedag en het tweede 24-48 uur later. Deze fecesmonsters (poliovirus is immers een enterovirus en daarom is er veel meer kans dit virus te vinden in feces dan in lumbaalvocht) dienen te worden opgestuurd naar het RIVM (Laboratorium voor Infectieziekten, Diagnostiek en Screening). Met mw.dr.M.A.E.Conyn-van Spaendonck kan men eventueel nader over (de surveillance van) de ASV overleggen (tel. 030-2743018).

Behalve de tijdigheid van de meldingen baart ook het aantal feceskweken ons zorgen. Vaak wordt slechts één fecesmonster ingestuurd, dikwijls is dit ook nog te laat afgenomen. In ons land is er dus sprake van een gebrekkige rapportage en van ontoereikende virologische evaluatie van ASV-gevallen. Daarom wijzen wij erop dat het in deze surveillance nadrukkelijk gaat om álle gevallen van ASV, dus ook wanneer een polio-infectie uiterst onwaarschijnlijk wordt geacht of wanneer inmiddels een (duidelijke) andere oorzaak is vastgesteld: altijd moet onderzoek naar de aanwezigheid van poliovirus deel uitmaken van de procedure. Voor de Nederlandse situatie kunnen ook personen ouder dan 15 jaar worden betrokken in de surveillance.

De uitdaging voor ons allen bestaat eruit om ook in ons land de te verwachten incidentie van ASV vast te stellen als bewijs van een zo compleet mogelijke registratie.

ABSTRACT

Global eradication of poliomyelitis by the year 2000. – The World Health Organization wants to attain global eradication of poliomyelitis in the year 2000. In all countries commissions are installed to document polio-free certification. Four activities are considered vital by the WHO to achieve this goal: (a) strict surveillance of all suspected cases of poliomyelitis, (b) close clinical and virological examination of all children younger than 15 years with acute flaccid paralysis (AFP), (c) laboratory surveillance of poliovirus isolates and (d) surveillance of sewage. The Netherlands has been selected as example country for the certification process. However, the AFP surveillance is not yet optimal, therefore all physicians are asked to join in the effort.

LITERATUUR

[1] Loon AM van, Avoort HGAM van der. 'De jacht op het poliovirus is geopend' (vervolg). Ned Tijdschr Geneeskd 1997;141:1420-4.

Aanvaard op 11 maart 1998

Bladvulling

Zuur zonder maag

Beweerd wordt dat het zoutzuur der maag op de physiologische rottingsprocessen in het darmkanaal desinfecteerend werkt. Bij de patiënte zonder maag is echter de hoeveelheid aetherzwavelzuur in de urine niet hooger, zelfs lager dan normaal. Toediening van zoutzuur als desinficiens van het darmkanaal heeft dus geen zin. Zooals bekend is, komen in de urine wisselingen voor in het zuurgehalte, welke door de afscheiding van het zoutzuur in de maag worden veroorzaakt. 's Morgens is de urine het zuurst en na een ruimen maaltijd kan zij zelfs alcalisch worden. Deze wisselingen ontbreken bij de patiënte, wier urine een vrij constant zuurgehalte vertoont.

(Wetenschappelijke Mededeelingen. Ned Tijdschr Geneeskd 1898;42II:408.)

Annex 5

nator inlichten die vervolgens de huisarts, de ouders en de entadministratie zal informeren, waarna verwijzing naar de academische kinderkliniek te Leiden, Nijmegen, Rotterdam of Utrecht zal plaatsvinden. Indien een patiënt elders opgenomen is, kan hij/zij onder behandeling van de kinderarts blijven. De coördinator zal contact met hem/haar opnemen om te overleggen over het te volgen beleid met betrekking tot de afwijkende hielprikuitslag.
Om de effectiviteit van het screeningsprogramma te bepalen zal in geheel Nederland de NSCK-registratie (1 januari 1998 tot 1 juli 2000) worden gebruikt.

Vraagstellingen

1. Wat is de prevalentie van AGS in Nederland?
2. Op welke levensdag worden patiënten verwezen naar het ziekenhuis, waren er symptomen en kan de start met behandeling van AGS-patiënten worden vervroegd door invoering van een screeningsprogramma?
3. Kan in Nederland een neonataal screeningsprogramma voor AGS, dat voldoet aan de criteria van Wilson en Junger, worden opgezet?
4. Onder welke voorwaarden kan een dergelijk screeningsprogramma worden geïncorporeerd in de huidige PKU/CHT screening?

Hielprikprocedure

Vroegtijdige behandeling (voor de tiende levensdag) is essentieel om een bijniercrisis te voorkomen. Het is daarom van groot belang de hielprik zo vroeg mogelijk en bij voorkeur op **dag 5** uit te voeren (dit komt ook de PKU/CHT screening ten goede). Omdat er een extra bepaling moet worden uitgevoerd is het van belang dat **alle 4 rondjes goed gevuld** worden. Dit om te voorkomen dat er een herhaalde eerste hielprik voor AGS moet plaatsvinden. Daarnaast zijn de afkapgrenzen afhankelijk van de **zwangerschapsduur** en het **geboortegewicht**, het is belangrijk deze volledig in te vullen.
Willen de ouders niet dat het hielprikbloed wordt onderzocht op AGS dan kan 'geen AGS' op het setje worden geschreven.
De screening wordt gefinancierd door het Praeventiefonds en is een gemeenschappelijk initiatief van de volgende medewerkers:

Surveillance van acute slappe verlamming in het kader van polio-eradicatie

De Wereld Gezondheidsorganisatie (WHO) heeft zich tot doel gesteld de ziekte polio in het jaar 2000 uit te roeien. Deze doelstelling bestaat al langer, maar er is nu reden tot optimisme en de kans is groot dat deze doelstelling in 2000 of kort nadien daadwerkelijk gehaald wordt. Daarmee zou polio na de pokken de tweede infectieziekte zijn die van de aardbol verdwijnt. Het optimisme is gebaseerd op een drietal belangrijke ontwikkelingen:

1. De incidentie van poliomyelitis is in de afgelopen jaren wereldwijd aanzienlijk gedaald, van 35.251 gevallen in 1989 tot 3.755 gevallen in 1996.
2. Sedert september 1991 is het Amerikaanse continent (Noord-, Midden- en Zuid-Amerika) vrij van polio: er is geen endemische circulatie meer van wild poliovirus. Deze indrukwekkende prestatie is geleverd door een hoge vaccinatiegraad te combineren met een intensieve bewaking door surveillance van acute, slappe verlamming. Het blijkt mogelijk om ook in minder ontwikkelde landen polio uit te roeien.
3. De laatste jaren is het gelukt om op grote schaal nationale immunisatiedagen te organiseren in landen waar polio nog endemisch voorkomt. Dergelijke dagen zijn gehouden in bijvoorbeeld China, India en de Centraal-Aziatische republieken, en vormen een belangrijk hulpmiddel om wereldwijd een voldoende hoge vaccinatiegraad te bereiken.
   Gesterkt door deze gunstige ontwikkelingen, is de WHO begonnen met de omvangrijke certificatieprocedure die nodig is om er over enige jaren zeker van te zijn dat het virus niet meer circuleert. Pas dan behoort kinderverlamming voorgoed tot het verleden en kunnen we de aanzienlijke economische winst boeken wanneer met vaccinatie tegen polio gestopt wordt.

De WHO heeft ons land aangewezen als één van de voorbeeldlanden voor het certificeringsproces. Deze aanwijzing getuigt van een groot vertrouwen in de

dec '97 ?

kwaliteit die ons land kan leveren bij de uitvoering van de activiteiten die nodig zijn om Nederland als 'poliovrij' te certificeren.

Welke activiteiten zijn nodig?

- Surveillance op basis van de wettelijk verplichte aangifte van elk ziektegeval, verdacht voor poliomyelitis.
- Nader klinisch en virologisch onderzoek van alle kinderen met acute slappe verlamming (AFP, acute flaccid paralysis).
- Laboratoriumsurveillance van poliovirusisolaten.
- Surveillance van rioolwater, gericht op het vaststellen van circulatie van wild poliovirus. Deze surveillance wordt uitgevoerd op plaatsen waar veel ongevaccineerden bijeen komen of wonen.
  Als belangrijkste activiteit geldt de surveillance van acute slappe verlamming. Het succesvolle programma in Zuid- en Midden-Amerika heeft het grote belang van deze methode nog eens onderstreept.

U bent als kinderartsen reeds langer betrokken bij het onderzoek naar acute slappe verlamming bij kinderen in Nederland. Via het Nederlands SignaleringsCentrum Kindergeneeskunde (NSCK) meldt u in principe maandelijks het aantal gevallen van acute slappe verlamming in uw praktijk.
Met dit systeem zijn, dankzij uw medewerking, inmiddels goede ervaringen opgedaan, maar vanwege de hoge eisen van de WHO is een intensivering van de surveillance noodzakelijk.

De intensivering heeft betrekking op twee onderdelen:

1. Op grond van onderzoek gaat de WHO uit van een te verwachten incidentie van 1 geval van acute slappe verlamming per 100.000 kinderen jonger dan 15 jaar per jaar.
   In Nederland is op grond van de gegevens uit de NSCK in 1995 een incidentie van 0,39 per 100.000 vastgesteld en in 1996 een incidentie van 0,53. Dit betekent dat er in Nederland waarschijnlijk nog sprake is van een onderrapportage.
   Daarom wijzen wij erop dat het in deze surveillance nadrukkelijk gaat om alle gevallen van AFP, ook wanneer u polio-infectie als oorzaak uiterst onwaarschijnlijk acht of wanneer inmiddels een andere oorzaak is vastgesteld. Dit houdt bijvoorbeeld in dat alle gevallen van Guillain-Barré Syndroom en bulbaire paralyse moeten worden gemeld. De uitdaging bestaat eruit om ook in ons land de te verwachten incidentie vast te stellen, als bewijs van een zo compleet mogelijke melding.
2. Om er zeker van te zijn dat een geval van acute slappe verlamming niet veroorzaakt wordt door poliovirus, eist de WHO nader onderzoek. Dit omvat virologisch onderzoek van twee faecesmonsters, het eerste verzameld binnen 14 dagen na de eerste ziektedag, het tweede 24 - 48 uur na het eerste monster. Hiermee wordt een virus kweek ingezet; eventueel geïsoleerd enterovirus zal nader worden getypeerd, zodat kan worden uitgesloten dat poliovirus de oorzaak is.
3. De vragenlijst die de kinderartsen na melding wordt toegestuurd is op enkele punten verbeterd. Voorts zal bij de meldende kinderartsen navraag worden gedaan naar de eventueel resterende verschijnselen, 60 dagen na de eerste ziektedag. Hiertoe wordt hen in voorkomende gevallen een briefje met antwoordformulier en -envelop toegestuurd.

Voor het geval dat AFP-patiëntjes jonger dan 15 jaar bij de neuroloog komen zonder dat u in consult wordt geroepen, raden wij aan uw collega-neuroloog bij de AFP-surveillance te betrekken.
Wanneer het RIVM, belast met de AFP-surveillance, via het NSCK over uw maandelijkse meldingen van het AFP wordt geïnformeerd, is meestal al wat tijd verstreken sinds de eerste ziektedag. Daarom bevelen wij u aan om in voorkomende gevallen van AFP direct een faecesmonster te laten onderzoeken, zelfs als een polio-infectie u zeer onwaarschijnlijk lijkt. Voor overleg over de uitvoering van de AFP-surveillance en bijkomende diagnostiek kunt u zich wenden tot de contactpersoon bij het RIVM (Mw. M.A.E. Conyn-van Spaendonck, tel. 030-274 3018, Mw. A.W.M. Suijkerbuijk, tel. 030-274 3401).

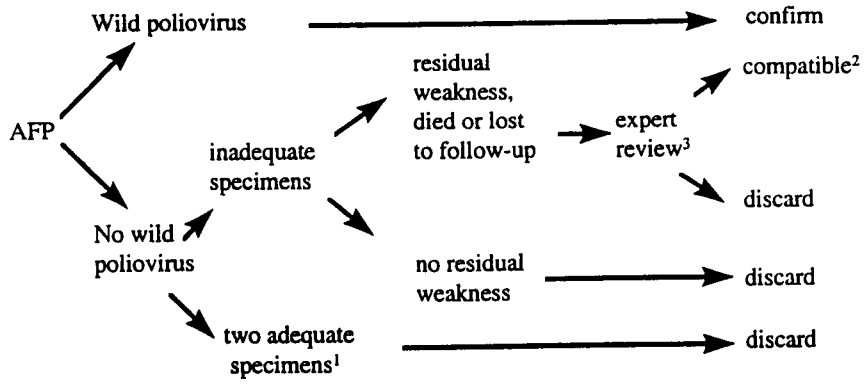
Wij doen een dringend beroep op u om als meest betrokken beroepsgroep in de komende jaren een extra inspanning te leveren om de surveillance van acute slappe verlamming in Nederland te optimaliseren zodat kan worden voldaan aan de criteria van de WHO, en op deze wijze een bijdrage te leveren aan de wereldwijde uitroeiing van polio. Gezamenlijk kunnen we ervoor zorgen dat het klassieke schrikbeeld van de kinderverlamming definitief tot het verleden gaat behoren!

Prof.dr. J.B. Wilterdink, Voorzitter Nationale Certificatiecommissie Poliomyelitis Eradicatie
J.K. van Wijngaarden, arts, Inspecteur Infectieziekten
Mevr. Dr. M.A.E. Conyn-van Spaendonck, Centrum voor Infectieziekten Epidemiologie (RIVM)

Het rapport 'Paediatric Surveillance of Acute Flaccid Paralysis in the Netherlands in 1995 and 1996' (RIVM rapportnummer 213676006, Bilthoven november 1997) is op te vragen bij het secretariaat van het Centrum voor Infectieziekten Epidemiologie (RIVM, tel. 030-274 3679).

Annex 6

Virologic classification scheme



[1] Two adequate specimens = 2 specimens collected from the case, at least 24 hours apart and within 14 days of paralysis onset; each specimen must be of adequate volume (8-10 grams) and arrive in the laboratory in "good" condition. Good condition = no desiccation, no leakage, adequate documentation and evidence that the reverse cold chain was maintained.

[2] Compatible" cases represent a surveillance failure and should be scrutinized for clustering in space and time.

[3] Cases undergoing expert review and subsequently classified as "discarded" or "compatible" should be line listed using Annex 2d.