

introduction of molecular methods for enterovirus detection, there would be fewer isolates available in future years. To date, nearly 400 poliovirus isolates have been proven to be Sabin vaccine-like. Once the large number of isolates from NSW has been screened, over 950 enteroviruses will have been tested to exclude wild poliovirus.

With the expected global eradication of wild poliovirus by the end of the year 2000 or 2001, the next task for laboratories will be to either transfer wild poliovirus strains to designated repositories or destroy them. The continued cooperation of virologists in Australia will be sought to carry out this task.

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# Acute Flaccid Paralysis surveillance in Australia Progress Report 1995-1998

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### Introduction

The World Health Organization (WHO) aims to eradicate poliomyelitis from the Western Pacific Region by the year 2000. As part of the certification process, active surveillance of acute flaccid paralysis (AFP) was initiated in Australia in March 1995.

While it is unlikely that Australia does have indigenous wild poliovirus, adequate investigation of all cases of AFP is required for WHO certification. A number of indicators have been established to monitor the performance of AFP surveillance systems.<sup>1</sup> Most importantly, even in the absence of wild poliovirus circulation, surveillance systems should be capable of detecting at least one case of AFP

per 100,000 population aged less than 15 years or 40 cases per year in Australia. Secondly, at least 80% of AFP cases should have two specimens collected within 14 days of onset of paralysis, 24 hours apart, even if the clinician involved is confident of an alternative diagnosis. Stool specimens must be tested for poliovirus in a WHO accredited laboratory which for Australia is the Victorian Infectious Diseases Reference Laboratory. Stool testing also has the additional advantage of identifying other viruses which can cause poliomyelitis-like illness.

The objectives of this project are:

- to determine the incidence, aetiology and clinical picture of AFP in children under 15 years, and

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- to determine whether paralytic 'wild' poliovirus has been eradicated from Australia.

## Methods

Active AFP surveillance was initiated in March 1995 through the Australian Paediatric Surveillance Unit (APSU). The APSU sends out a monthly report card to all paediatricians and asks them to indicate the number of AFP cases they have seen in the last month. Conditions which may present as AFP include wild and vaccine-acquired poliomyelitis, Guillain-Barré syndrome or transverse myelitis or traumatic paralysis. Paediatricians are also requested to report all cases of AFP by telephone to the National Centre for Disease Control (NCDC). Clinicians arrange for collection of stool specimens and provide further clinical and laboratory information on the case by postal questionnaire. In addition a 60-day follow-up questionnaire is sent to paediatricians to ascertain the presence of residual paralysis.

### Case Definition

Any child aged less than 15 years with:

acute onset of flaccid paralysis in one or more limbs or acute onset of bulbar paralysis.

## Results

There were 171 reports of AFP for the period March 1995 to December 1998, for which further information was

available on 145 (85%). Of these, 27 were duplicate reports and 4 were errors. One hundred and eleven cases of AFP were confirmed, of which 30 occurred in 1995, 24 in 1996, 26 in 1997 and 31 in 1998. 'Confirmed' cases are those reported to the APSU and confirmed by information supplied in the questionnaire. Three cases aged over 15 years were excluded for the purposes of calculating incidence, which was estimated at 0.71/100,000 children less than 15 years old for the study period. This may be an under-estimate as further clinical information is currently unavailable on 6 cases reported in 1998. The annual reported incidence of AFP is shown in Table 1.

The ages of the AFP cases ranged from 2 months to 15 years. Fifty-eight per cent of the cases were male. One-hundred and five cases were hospitalised and 35

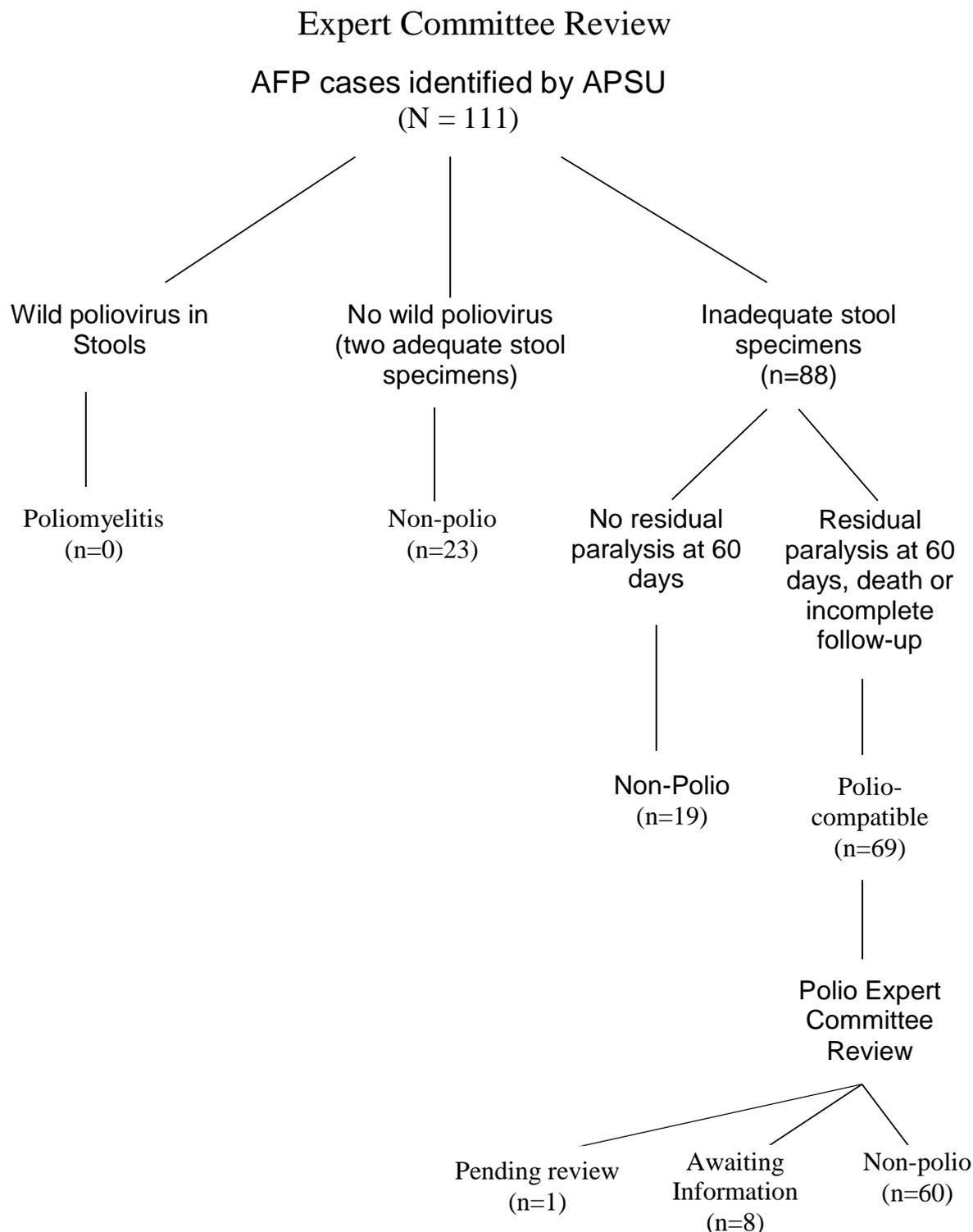
**Table 1. Annual reported incidence of AFP/100,000 children < 15 years of age**

Year of Diagnosis	Confirmed cases	Incidence (95% CI)
1995	30	0.9
1996	24	0.6
1997	26	0.66
1998	31	0.79
1995-8	111	0.71

**Table 2. Diagnoses of 111 cases of AFP, March 1995 - December 1998**

Diagnosis	N	%
Guillain-Barre syndrome	52	46.9
Transverse myelitis	21	18.9
Trauma	5	4.5
Encephalomyelitis / myelitis	5	4.5
Demyelination (includes 1 with viral encephalitis and 1 post- viral demyelination)	5	4.5
Ischaemic cord damage	4	3.6
Tick bite paralysis	3	2.7
Spinal cord damage/spinal surgery	3	2.7
X-linked recessive remittent /acquired myaesthesia gravis	2	1.8
Myelitis secondary to mycoplasma infection	1	0.9
Polio like illness due to enterovirus (Echo 9)	1	0.9
Infant botulism	1	0.9
Lumbar radiculopathy	1	0.9
Hypotensive brain stem necrosis or demyelination	1	0.9
Post drug polyneuropathy	1	0.9
Post intensive care polymyopathy	1	0.9
Neuroblastoma	1	0.9
Post-viral myositis	1	0.9
Not specified	2	1.8
Total	111	100.0

Figure 1. Virological classification of AFP cases<sup>2</sup> and case outcomes following Polio



required intensive care admission. Information is not available on hospitalisation status of 3 cases while another 3 cases were not hospitalised.

Follow-up information on the presence of residual paralysis at 60-days after diagnosis is available on 50 (45%) of the 111 cases. This information was available for 48% cases notified in 1998, 65% cases in 1997, 29% of cases notified in 1996 and 36% of cases notified in 1995. Of the 50 cases for whom follow-up information was available, 25 (50%) had residual paralysis at 60 days and one child with Transverse Myelitis died. Stool testing in

accordance with the study protocol was undertaken in only 23 (21%) cases.

Diagnoses of the 111 confirmed cases are shown in Table 2. There were no cases of poliomyelitis identified during the study period. According to WHO's virological classification 42 (38%) of cases would be classified as 'non-polio' cases either because they had two poliovirus negative stool cultures or because there was no residual paralysis at 60 day follow-up. However, using this classification, 69 (62%) would be classified as 'polio compatible' because of incomplete follow-up data or failure

of provision of specimens for stool culture (Figure 1). Following review by the Polio Expert Committee, 60 of the 69 (87%) of the 'polio compatible' cases were reclassified as 'non-polio' based on information provided by the reporting paediatrician and the investigating laboratory.

In summary, 102 (92%) of the 111 confirmed AFP cases have been classified as 'non-polio.' One case is pending review by the Polio Expert Committee and for 8 cases further clinical and laboratory information which could allow them to be reclassified as 'non-polio' is not yet available.

## *Discussion*

There have been no identified cases of AFP due to 'wild' or vaccine poliovirus in Australia during the study period. The surveillance has provided a large number of AFP cases especially Guillain-Barré Syndrome and Transverse Myelitis and provided information on their aetiology.

The surveillance system is a very useful part of the WHO Polio Eradication certification process. However, incomplete information on cases is a continuing problem. As polio has not been seen in Australia for over 20 years, it is sometimes not considered as a differential diagnosis in a child with AFP and appropriate stool testing may not be undertaken. Similarly paediatricians may omit to report cases of AFP when the child is proved to have an alternative diagnosis to polio. This may result in under reporting of AFP cases to APSU.

In cases of AFP where the stool sampling was inadequate for WHO's requirements, the Polio Expert Committee has been able to review case notes and classify the majority of these cases as non-polio.

Retrospective searches of in-hospital databases are currently being undertaken to identify additional cases of AFP not reported to the APSU. Medical records of these cases will be reviewed for clinical and laboratory information and the Polio Expert Committee will use this

information to classify these cases as polio compatible or non-polio. The combination of active surveillance and hospital searches will enable Australia to meet the WHO certification criteria to be declared polio-free. Although it is anticipated that retrospective hospital searches will increase the number of cases identified, it is time consuming, costly and unlike active surveillance, does not allow timely investigation of AFP cases.

If Australia is to be declared polio-free, it is vital that all cases of AFP are reported promptly to APSU and NCDC, that questionnaires are returned and that stool samples are collected from all cases, including those in whom poliomyelitis is not considered to be the diagnosis. Clinicians can assist by ensuring that the specimens are ordered in accordance with the study protocol and that hospital laboratories forward stool specimens and all poliovirus isolates whatever their source to the Victorian Infectious Diseases Reference Laboratory.

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