

# **Current and future service provision for children with Auditory Processing Disorder in Ireland**

**November 2008**

**This research project was funded by the Health Service Executive (HSE).**

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Published by the Department of Speech and Language Therapy, NUI Galway.  
November 2008

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Design and Layout: Rob Smyth

Printed by Cahill Printers, Dublin.

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Footnote: Auditory Processing Disorder will be referred to as APD throughout this document.

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## Foreword

One of the key cornerstones in language and literacy acquisition is auditory processing, which has been defined simply as what we do with what we hear. Some children have particular difficulties with processing auditory information which includes both speech and non-speech sounds and this is referred to as an auditory processing disorder (APD). As the processing of auditory information is of fundamental importance in learning, children presenting with APD are at risk of experiencing difficulties learning to talk, read, write and interact socially.

A group of interested professionals, speech and language therapists and audiological scientists, established an interdisciplinary APD Ireland Research Group in October 2005 to discuss APD services for the school-aged population in Ireland. The clinical experiences of these professionals suggested that the number of children presenting with speech, language and communication difficulties with subsequent educational problems had increased significantly in the past 25 years. The professional involved suspect that a percentage of children have APD but due to a gap in service provision they are not being identified. Following discussions, an APD research team comprising of academic and clinical speech and language therapists and audiological scientists was established. The APD research team agreed to concentrate on two key areas for initial research focus:

1. The current services available for children with APD and levels of knowledge and skill among key professionals in Ireland.
2. To explore the initial steps required in the development of an integrated service for children with APD in Ireland.

To achieve the research objectives, the APD research team approached the HSE for funding which was received in January 2007. The research team collected data from the key professionals involved in the management of APD by

1. Carrying out a national survey;
2. Hosting a facilitated consultation day.

This report shares the information gathered from the research and provides recommendations for the steps necessary to develop an integrated service for children with APD in Ireland.

Signed



*Chairperson on behalf of group*

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## Acknowledgements

The APD Research Team would like to acknowledge the contributions of the following throughout the project:

Ms. Celine Gordon, Administrative Assistant.

Ms. Lorraine Kent, Administrative Assistant.

Ms. Libby Kinneen, Organisational Manager HSE West.

Mr. Travis Ryan, Research Assistant in Phase 1.

We would also like to acknowledge the following for their support and guidance:

Professor Andrew Murphy, Centre for Clinical Health Services Research, NUI Galway.

Ms. Mary O'Connell Assistant National Director of Primary Care, Office of the CEO, HSE.

Ms. Niamh O'Rourke, Primary Care Specialist, Office of the CEO, HSE.

Ms. Catherine Duffy, Primary Care Specialist, Office of the CEO, HSE.

APD Interest Group UK.

Pilot questionnaire respondents.

Speech and Language Therapy Managers, National Educational Psychology Manager, and Audiological Scientists for distributing the information and questionnaires.

All participants of both phases of the study for their contribution to the research.

Presenters of the facilitated one-day event:

Dr. Doris Bamiou – Consultant in Audiological Medicine. Department of Neuro-otology, National Hospital for neurology and Neurosurgery, and Honorary Senior Lecturer at UCL Institute of Child Health.

Ms. Melanie Ferguson – Principal Audiological Scientist, Institute of Hearing Research and Head of the Nottingham Clinical Section

Dr. Sally Hind – Developmental Psychologist. Institute of Hearing Research, Nottingham U.K. and current chair of the BSA APD Interest Group, UK

Ms. Dilys Treharne – Lecturer and Speech and Language Therapist, Department of Human Communication Sciences, University of Sheffield.

Dr. Maggie Vance – Department of Human Communication Sciences, University of Sheffield

## Executive Summary

Auditory processing involves detection of the sound, determining the source of the sound, identifying the sound, separating the sound from background noise and finally interpreting the sound. A difficulty in one or a combination of the range of skills necessary in auditory processing is increasingly recognized internationally as a disorder, namely Auditory Processing Disorder (APD). The literature from the USA, Australia, South Africa, and UK would indicate that 3-10% of the population have some degree of this condition (Medical Research Council (MRC), 2004). There are currently no statistics on the number of people in Ireland presenting with APD. The need to address APD in the Irish context has emerged over the years as key professionals in clinical and education practice found that they were working with children who in spite of normal auditory acuity, were experiencing difficulties processing auditory information.

This research project funded by the Health Service Executive (HSE) investigated the current services available for children with APD and the levels of knowledge and skill among key professionals in Ireland and explored the development of an integrated service for children in Ireland.

The research was conducted in two phases and included both quantitative (phase 1) and qualitative (phase 2) methodology. In Phase One 520 surveys were distributed nationally to speech and language therapists, audiological scientists and psychologists. The total response rate was 54%. Phase Two involved a facilitated large scale one-day event with 111 key stakeholders in the provision of services for children with APD in attendance. The high response rate to the survey and the excellent attendance rates of the three key disciplines from all geographical areas in Ireland at the facilitated one-day event indicate that there is a national interest in APD.

In summary the results of this research show:

- Consensus among the key professionals involved in this study that there is a gap in service provision for children with APD in Ireland.
- Evidence that the professionals pertinent to an APD service are highly motivated and interested in creating evidence based recommendations for the development of an integrated service in Ireland.
- That it is vital to train and educate the professionals involved as the majority currently report that they are not adequately equipped in the management of this disorder.
- The ideal care-pathway outlined, highlights the need to develop services at a local and tertiary level.

- A need to include training in APD in both under graduate and post graduate education programmes.

A number of recommendations have been identified for the HSE which are clear and evidence based and which will inform future action and implementation plans, for the development of an integrated service for children with APD in Ireland.

There is an immediate need for:

- Dissemination of the findings of this research to the participants of the study, practitioners and teachers, and within academic fora.
- The setting up of an implementation group to progress the development of an APD Service.
- Relevant managers within the pertinent disciplines of the key stakeholders to include APD services in their existing service plans.
- Agreed funding to support the continuation of the APD Ireland Research Group so that the momentum and interest of the pertinent professionals involved in APD services can be sustained and utilized to address this identified gap in services

The current policy context of the Irish health service and education service provides an ideal opportunity to put a strategy in place which addresses the needs of children with APD. This strategy would include provision of a pathway of care which identifies, supports and empowers children with APD to attain their full potential and participate fully in society.

## Section 1: Introduction

This section provides an introduction to auditory processing and auditory processing disorder and outlines the background to the research.

### What is Auditory Processing?

Auditory processing is defined as what we do with what we hear (Katz & Tillery, 2004). It is an umbrella term which refers to a range of auditory skills that are necessary to decode auditory stimuli in a way that is meaningful to the individual (Sloan, 1998). It entails the processing of auditory information at various levels in the central auditory system. It therefore involves a range of auditory skills beyond auditory acuity which are fundamental to decoding auditory stimuli and understanding the spoken word. In processing sound a listener detects the sound, determines where it is coming from, identifies the sound, separates it from background noise and then interprets it.

#### What is Auditory Processing Disorder?

Auditory processing disorder or APD was first discussed as a condition by Jack Katz (USA) in the mid 1960's. The disorder can be in any one or a combination of the skills required to process sound. APD is an inability to understand and manipulate information heard, including speech and non-speech sounds. For many years there has been much discussion internationally about the nature of APD and it is now recognised as a disorder. This discussion will continue as new research evidence arises.

*"There is mounting evidence that in spite of normal hearing sensitivity a fundamental deficit in the processing of auditory information may underlie problems in understanding speech in the presence of background noise, in understanding degraded speech, in following spoken instructions or in discriminating and identifying speech sounds"*

(Musiek & Jerger, 2000: 467).

### How common is Auditory Processing Disorder?

The literature from the USA, Australia, South Africa, and UK would indicate that 3-10% of the population have some degree of this condition (Medical Research Council Institute of Hearing Research, UK, 2004). Currently there are no statistics on the number of people in Ireland presenting with APD.

### What are the difficulties associated with APD?

Children with APD can experience difficulties in learning, speech, language including written language (ASHA, 2005).

Difficulties may include:

- Understanding when listening in adverse listening environments
- Understanding spoken messages
- Difficulty following complex auditory directions
- Remembering auditory instructions and therefore misunderstanding messages
- Difficulty attending and avoiding distraction
- Responding inconsistently or inappropriately
- Frequently asking that information be repeated
- General listening ability but in particular listening in noisy environments.
- Difficulty localizing sound sources
- Expressing oneself clearly when using speech
- Difficulties in auditory processing can lead to poor reading and spelling skills.

(Katz & Tillery, 2004; Musiek, 1985; National Institute on Deafness and Communication Disorders, 2004; ASHA 2005; BSA 2007).

## How does this condition impact on a child's development?

Children with APD can behave as if they cannot hear, especially in noisy environments. The majority of a child's interactions occur in noisy environments. Therefore the inability to separate relevant auditory stimuli (e.g. the teacher's voice) from irrelevant auditory stimuli (e.g. noise on the corridor outside) can disrupt normal communication, language development and academic progress.

Children with APD have difficulties with tasks that are critical for school performance. Consequently there may be a discrepancy between a child's performance at school and their overall cognitive ability.

When a child has difficulty processing words, the growth of their vocabulary and the acquisition of grammar will be significantly influenced.

As a result of having APD, children may also experience difficulties with:

- Social communication and integration
- Achieving a level of educational attainment reflecting their ability.

In addition to the language and academic difficulties often associated with APD, some individuals with APD have a higher likelihood of behavioral, emotional and social difficulties (ASHA, 2005). This may eventually lead to difficulties in fulfilling their potential and taking a full and active role in society.

## Why is diagnosis important?

Differential diagnosis involves differentiating among disorders which have similar symptoms or manifestations (Ferre, 2007). APD may result in or coexist with difficulties in other central nervous system based skills e.g. learning disabilities, attention deficit disorder or specific language impairment. The behavioral characteristics of APD are similar to other sensory, neuro-cognitive, educational, communicative and/or social emotional difficulties but the underlying cause is different. Thus it is essential to have an accurate differential diagnosis so that targeted intervention programmes can be put in place which will result in effective and appropriate use of limited resources.

*"You cannot treat effectively that which has not been diagnosed specifically"*

(Ferre, 2006: 161).

## How is APD assessed and diagnosed internationally?

Audiologist scientists, speech and language therapists, psychologists, teachers, parents and other health professionals all have a role in identifying APD as often children with APD will have speech, language and academic problems that are apparent in both social and school situations (Palfery & Duff, 2007).

Bellis (2007) describes three stages within the assessment process

1. Screening assessment
2. Diagnostic assessment
3. Differential diagnosis

### 1. Screening Assessment

This phase requires use of reliable and valid standardized screening tools which can be administered by health and/or education professionals. Parents will also be involved in this phase. Screening assessments should not be used for diagnostic purposes. The purpose of screening is:

- To determine the need for further testing
- To reduce over-referrals and inappropriate referrals

There is current research in the UK focusing on the development of a screening assessment for APD (Hind, 2006).

## 2. Diagnostic assessment

This phase requires the use of specialized diagnostic tests and equipment which can only be administered by an audiological scientist. SLTs and other professionals collaborate in this assessment process. Bellis (2007) describes the purpose of the diagnostic assessment.

- a. To examine the integrity of the central auditory nervous system

By employing a battery of assessments which are sensitive, reliable and efficient and meet accepted scientific standards

By assessing the varying levels/loci within the central nervous system as well as different perceptual processes.

- b. To determine the presence of APD

- c. To describe APD and its parameters

Traditionally the assessment of APD has been performed by using a battery of behavioral tests which typically include:

- auditory discrimination tests (assessing speech and non-speech)
- auditory pattern recognition tests – assessing ability to discriminate among and sequence auditory information over time
- dichotic speech tests – assessing ability to separate or integrate differing auditory stimuli presented to each ear simultaneously
- monaural low-redundancy speech tests – assessing ability to recognise degraded speech stimuli presented to one ear at a time or speech presented in background of noise or speech competition.

## 3. Differential Diagnosis

The purpose of differential diagnosis is to review and integrate all of the assessment results from the various professionals to arrive at a diagnosis. A diagnosis of APD is only made when specific, clear and distinct auditory deficits are identified by the key professionals involved in the assessment process.

(Bellis, 2007)

## How is APD treated?

Treatment needs to be based on an accurate diagnosis, neuro-scientific principles and derived from assessment results and should be evidence-based (Ferre, 2007).

In choosing an appropriate treatment programme, the clinician needs to ask three key questions:

- Does treatment efficacy data support the use of therapy?
- Is the therapy based on sound neuro-scientific principles?
- Is the therapy approach appropriate to the specific deficit area identified in the assessment process? (Ferre, 2006: 168).

To document treatment efficacy, it is necessary to show that real change has occurred as a result of the treatment and not some uncontrolled factor (Ferre, 2006).

The inclusion of any remedial activities in a management plan is based on neural plasticity research (Ferre, 2006). Because of the complexity of the central nervous system, no one treatment program can address all areas of need. Therapy approaches can be described as:

- ‘Bottom up’ processing approaches that are based on the notion that the listener’s ability to encode incoming signals is deficient. Auditory training activities are used to target the auditory deficits identified during diagnostic testing
- ‘Top down’ approaches are based on the notion that processing is concept driven, and they focus on the listener’s ability to apply rules of language and cognition to the communication event. Metalinguistic strategies refer to the listener’s ability to apply higher-order linguistic rules when confronted with adverse listening situations.

Current best practice advocates that treatment for children with APD has three key components and is referred to as the APD Management Tripod (Ferre, 2006: 163) which includes environmental modification, compensatory strategies and direct intervention.

## **1. Environmental Modification**

This involves modifying the environment to enhance the sound signal (Ferre, 2006). This can be achieved by:

- Reducing classroom noise by using curtains, acoustic ceiling tiles, damping highly reflective surfaces, cork bulletin boards, covering hard surfaces with fabric
- Using assistive listening devices to enhance the speech signal reaching the child’s ear, for example, Soundfield FM systems
- Reducing the rate of presentation of verbal material and repetition of material
- Paying attention to the seating arrangements within the classroom by positioning children with APD nearer to the sound source so that they can benefit from the addition of visual cues

## 2. Compensatory Strategies

Children may need to learn strategies to help them compensate for their auditory deficiencies. The following strategies may be useful:

- Visual cues can help children with APD
- Pre-teaching or previewing material will enhance familiarity with the material
- Use of books on tape
- Scheduling breaks in the listening day to help minimize auditory overload
- Providing additional time for class examinations.

## 3. Direct intervention

There are two types of direct treatment approaches, these are bottom up and top down, and Ferre (2006) provides a detailed outline of these approaches.

## Current international standing on diagnosis and treatment.

In both the area of diagnosis of APD and in the area of treatment approaches for APD, there is strong evidence of effectiveness.

Over the last 50 years, behavioral tests and electrophysiologic procedures have been developed with a high degree of sensitivity and specificity needed to diagnose auditory processing disorder.

Auditory training and related treatment approaches have been shown, using these same behavioral tests and electrophysiological procedures, as well as related measures of language, learning and reading, to change the central auditory nervous system, auditory behaviors, and in some cases more global language, communication, learning and reading function. Chermak 2007.

## What is the policy context for the provision of services to children in Ireland?

Currently the Irish health system is undergoing a transformation programme (Health Service Executive (HSE) 2006). Service providers find themselves increasingly under pressure to meet the ever changing needs of the population and of the health service. It is recognised that *"in this evolving environment change is not an option but a necessity"* (HSE, 2006: 5). Changing needs and increased expectations present both challenges and opportunities to evaluate and redefine methods of working, allowing us to employ new approaches to service delivery that include the latest research and best practice in both the medical and educational fields.

One of the key strategic priorities of the Health Service Executive Transformation Programme is to “*allow people to live healthier more fulfilled lives*” with “*easy access to high quality care and services*”. (HSE, 2006: 7). These priorities are reiterated in the Primary Care Strategy (Department of Health, 2001) which promotes:

- A strengthened primary care system which will play a more central role as the first and ongoing point of contact for people within the healthcare system
- An integrated interdisciplinary, high quality, team-based and user friendly set of services for the public.
- Enhanced capacity for primary care in the areas of disease prevention, rehabilitation and personal social services to complement the existing diagnosis and treatment focus Team-based approach within health and personal social services which will build capacity in primary care and contribute to sustainable health and social development.

The Education for Persons with Special Educational Needs Act, 2004 and the Disability Act, 2005 set out a new approach to assessing the needs of eligible persons with disabilities and/or special educational needs for health and/or educational services. The current provision of the Disability Act targets the 0–5 year old age group and by 2009 it is envisaged that the provision under the act provision will include 6–18yr olds.

One of the strategic priorities of the Department of Education and Science is to provide an inclusive school environment in which children’s needs can be met and where they “*can feel safe, feel they belong, feel communicated with and can communicate and feel valued*” (Department of Education and Science 2006: 3).

The policy context of the Irish health and education services provides an ideal opportunity to put a strategy in place which addresses the needs of children with APD. This strategy would include provision of a pathway of care which identifies supports and empowers children with APD to attain their full potential and participate fully in society.



## Section 2: Background to the Research

Human communication is core to learning and social interaction and is a key life skill. Children who experience difficulties with speech, language and communication are at a distinct disadvantage from an educational and social perspective. The need to address APD in the Irish context emerged over the years as key professionals in clinical and education practice found that they were working with children who in spite of normal auditory acuity, were experiencing difficulties processing auditory information. These children were subsequently referred to a number of professionals and underwent several different assessment procedures which were inconclusive. Thus without differential diagnosis of APD, intervention for these children was symptomatic and did not specifically target their underlying auditory processing difficulties.

Clinicians were thus concerned that there was a growing cohort of children whose needs were not being adequately assessed. The current Irish policy context highlights that all children have a right to interdisciplinary services that enable them to achieve the best possible outcomes and provide them with an opportunity to live their lives to their full potential.

This initial research had two main aims:

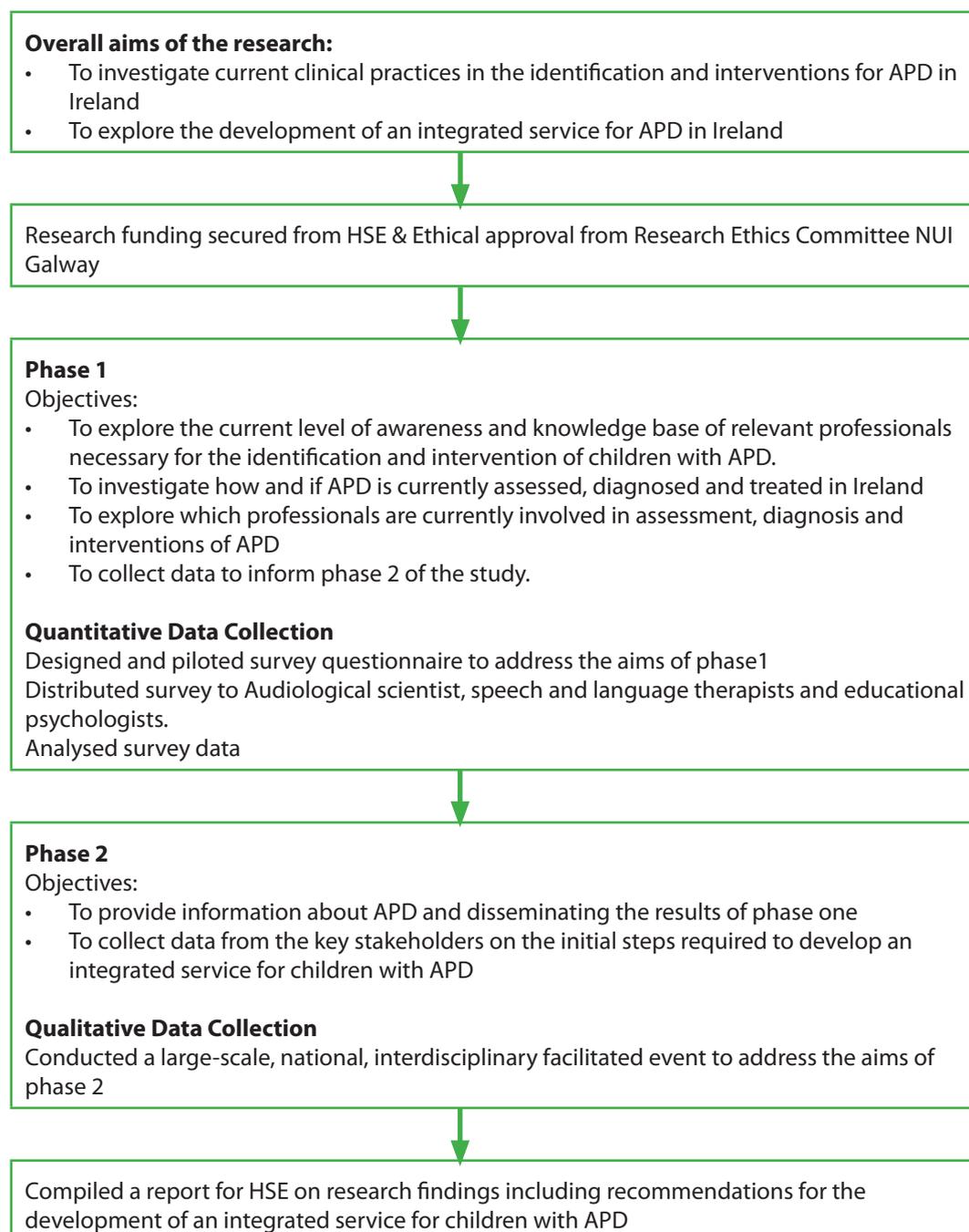
- To investigate current services available for children with APD and levels of knowledge and skill among key professionals
- To explore the development of an integrated service for children with APD



## Section 3: The Research Project

This section provides a detailed outline of the aims methods and procedures used to collect the data for this research. Table 1 gives an overview of the research aims and methodology. There are two phases to this study and a combination of quantitative and qualitative methods were used.

**Table 1: Overview of the research aims and methodology**



## Phase 1: Quantitative Data Collection

### Survey Development

The research team designed a survey to collect data to address aim one. The development of this survey was based on the questionnaire designed by the APD Interest Group (UK), with permission and some changes were made in order to address the specific questions of this research. The survey used in this research contained different types of questions e.g. dichotomous options (yes/no response), open-ended questions, and a five point Likert scale (A copy of the survey can be found in Appendix 1). The table below shows the research questions asked and the corresponding question numbers addressing these questions.

**Table 2: Overview of questions in survey**

Research questions	Items on survey
1. What are current levels of knowledge about APD?	Questions 1–5
2. How APD is currently assessed, diagnosed and treated and 3. Which professionals are currently involved in the assessment of children with APD?	Questions 6–12
4. What are the initial steps in developing a service for children with APD in Ireland?	Question 13

### Participants for Phase 1

International literature on APD indicates that the key stakeholders involved in diagnosis and intervention of APD are audiological scientists, speech and language therapists and educational psychologists. This knowledge guided the selection of participants. The criteria for eligibility to take part in the research were:

1. A qualified professional from one of the key stakeholders groups, working with children in public health services in Ireland.
2. Speech and language therapists working with children in the private services in Ireland were also eligible for inclusion.

A list of speech and language therapy managers was obtained through the Irish Association of Speech and Language Therapy Managers and they were emailed and requested to provide data on the numbers of speech and language therapists working with children in their area. A database was subsequently established. A list of private speech and language therapists was obtained through the Irish Association of Speech and Language Therapists in Private Practice. A list of audiological scientists working in Ireland was obtained from the Irish Society of Audiology. Contact was made with the Manager of the National Educational Psychology Services (NEPS) to inform them about the study, invite them to participate and to ascertain the number of educational psychologists working in NEPS. Five hundred and twenty clinicians (404 speech and

language therapists, 100 educational psychologists and 16 audiological scientists) were subsequently invited to complete the surveys (or return them uncompleted if they did not have children on their caseload).

## **Procedure**

### ***Pilot survey***

The survey was piloted on a sample of six participants, two from each of the key stakeholder groups. These participants were asked for specific feedback on the survey itself, the letter which would accompany the survey and to indicate time taken to complete survey. Comments from the pilot study enhanced the clarity and acceptability of the survey and indicated that the survey took twenty minutes to complete. Following this process, the survey was printed.

### ***Distribution of surveys to SLTs and Audiological Scientists***

404 questionnaires with an accompanying letter of invitation and instruction were posted to each SLT Manager. The managers agreed to distribute this documentation to the SLTs in their department. One of the researchers wrote to the private speech and language therapists and audiological scientists to invite each of them to participate and they were forwarded a copy of the questionnaire and accompanying instructions. The respondents were requested to complete and return the survey anonymously using the pre-paid envelopes provided by the APD Research Team in NUI Galway.

### ***Distribution of surveys to Educational Psychologists***

Educational psychologists working in Ireland were contacted with the help of the NEPS Manager. At the request of the NEPS Manager the researchers made the questionnaire available for completion online as it was considered this would increase the response rate. The NEPS Manager forwarded the questionnaire and accompanying invitation and instructions to the educational psychologists. The NEPS respondents were invited to return the questionnaires electronically directly to the APD Research Group. Respondents who did not work with children were requested to return the questionnaires uncompleted.

### ***Data Analysis***

The returned questionnaires were coded, entered, and analysed by a research assistant using Statistical Package for Social Scientists (SPSS, 2001) yielding descriptive statistics of frequency counts and percentage responses. The data obtained from open-ended questions were transcribed and coded into themes by the team of researchers and the frequency of these themes was reported.

## Phase 2: Qualitative Data Collection

### Design

Given the complexity of APD and the need to develop an integrated service, a qualitative participative design was used which was based on a 'whole-systems' approach. This approach involves including representatives from all stakeholders within a system who are involved in delivery and development of a service. The findings from question 13 in the survey from phase one of the research informed the design of phase two, which aimed to provide recommendations for the development of services in Ireland.

### Participants for Phase Two

In keeping with a whole-systems approach, key stakeholders in the provision of services for children with APD throughout Ireland were invited to participate in a facilitated large-scale one-day event. Detailed information about the event (See Appendix 2) was sent to all Speech and Language Therapy Managers in Ireland and the NEPS manager and they were requested to distribute this invitation to all relevant staff. An invitation to the event was also sent to all audiological scientists in Ireland, the Heads of academic Speech and Language Therapy programmes, and Ms Catherine Duffy, Primary Care Specialist, Office of the CEO, HSE. In addition, a number of occupational therapists contacted the principal investigator and expressed an interest in being involved in phase two and representatives from the Association of Occupational Therapists in Ireland (AOTI) were contacted to issue an invitation to their members. In total 112 professionals participated in this event.

### Procedure

A facilitated one day event was organized to:

- Provide information about APD and to disseminate the results of phase one in order to create a common picture across the disciplines of the disorder and current status of services in Ireland
- Collect data from key stakeholders on the initial steps required to develop an integrated service for children with APD

This one-day event had two components in order to meet the above mentioned objectives.

#### *First Component*

This involved the provision of information. A group of UK experts from all of the disciplines currently involved in research and clinical practice with children with APD (audiological science, speech and language therapy, psychology and medicine)

were invited to present on different aspects of APD and service delivery for children presenting with this disorder in the UK. These experts were chosen for two reasons:

- For their expertise and suitability given the comparability of the cultural and systemic issues in the UK and Irish health services
- They all have an internationally recognised track record in research and practice in APD.

The APD Research Group developed a working definition of APD which formed the basis of discussions and this was based on the UK definition of 2007 and the ASHA definition of 2005.

APD Ireland working definition:

*APD results from impaired neural function and is characterized by poor recognition, discrimination, separation, grouping, localization, or ordering of auditory information. It does not solely result from a deficit in general attention, language or other cognitive processes.*

The invited key experts provided keynote presentations and the results of phase one of the study were also disseminated to the participants.

### **Second Component**

This involved facilitating interdisciplinary discussion. This was achieved by the Group Facilitator allocating the 111 participants to ten groups, with each group having representatives of all of the disciplines identified above from different geographic areas of Ireland, to allow a maximum mix and integration of ideas. Participants were seated at round tables to facilitate open discussion and they were requested to record the main points of their discussion on flip-charts. Each task was presented one at a time and the flip chart notes were collected after each task.

Following the presentations from the first component the participants were asked by a facilitator to:

- Reflect on what they had heard and consider implications for the development of an integrated service for children with APD in the Irish context
- Work together to design an ideal pathway and contrast it with the current clinical pathway
- Identify current facilitators and barriers towards the development of an APD service in Ireland
- Identify key recommendations for the development of a service

- Prioritise three of these recommendations (each group member was given three votes (in the form of stickers) to highlight their three priorities from the group's list of key actions)

### **Data analysis**

The data from the flip charts were subsequently typed and analysed by the research group. The data from all of the groups were collated and overall key prioritised actions were identified for the development of an APD service.

## Section 4: Results

This section outlines the results of phase 1 and phase 2 of this study.

### Phase 1: Quantitative Strand

#### Response Rate and Respondents

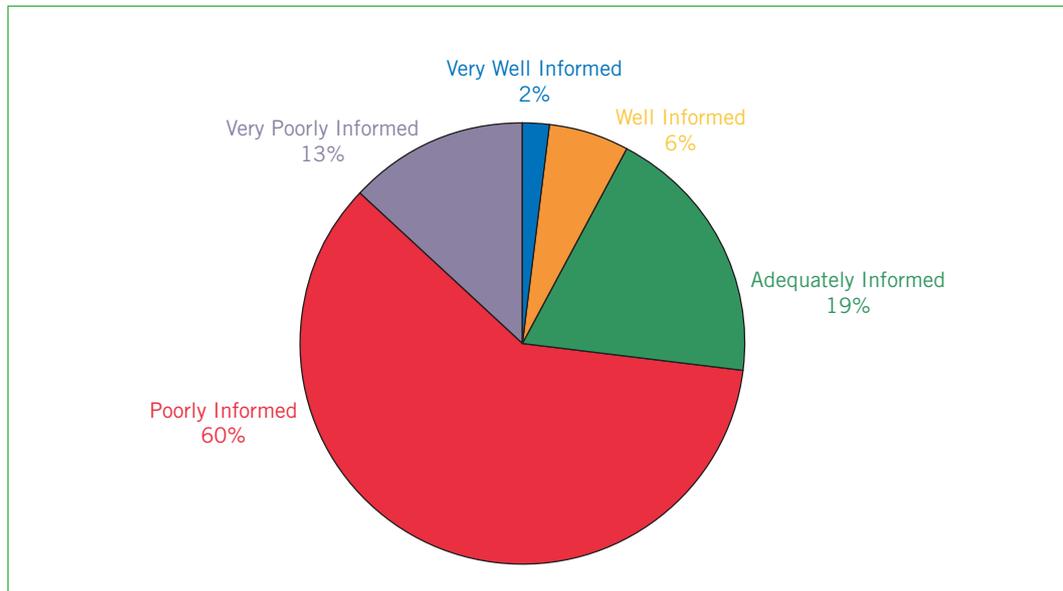
In total 520 surveys were distributed nationally with 66 returned as incomplete indicating that these participants were not working with children, resulting in 454 participants eligible to participate. Two hundred and eighty-four questionnaires (218 completed and 66 unfilled) were returned in hardcopy. Twenty-three completed questionnaires were returned electronically. The response rate for each profession can be found in Table 1. The total response rate was 53% of which 87% were speech and language therapists (n= 209), 10% were psychologists (n=23) and 4% were audiological scientists (n=9).

**Table 3: Questionnaire Response Rate for each profession**

Profession	Number of questionnaires distributed	Questionnaires returned and ineligible	No. of eligible participants	Number of questionnaires completed	Response rate
Speech and Language Therapists	404	65	339	209	62%
Audiological Scientists	16	1	15	9	60%
Educational Psychologists	100	0	100	23	23%
Overall	520	66	454	241	53%

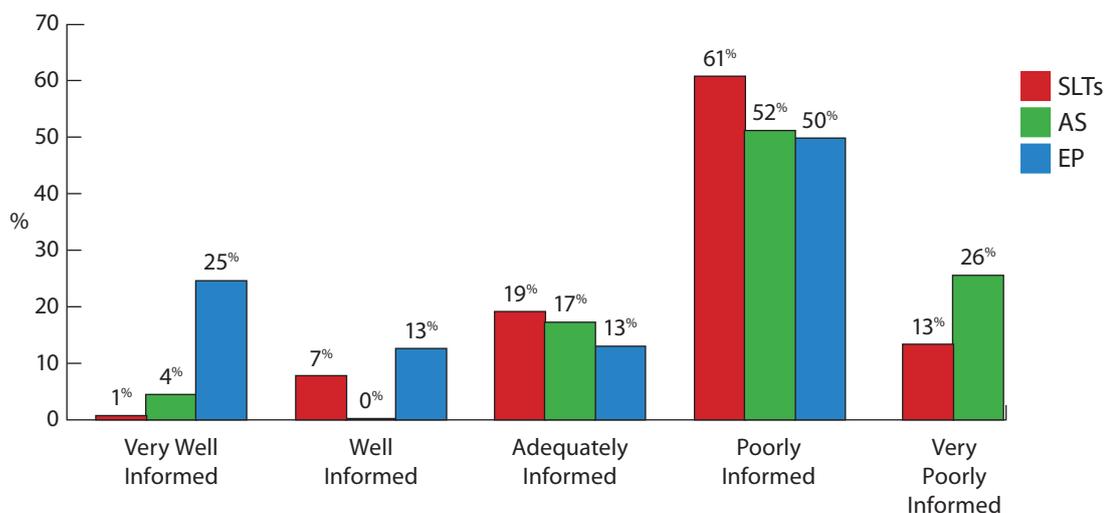
## How well informed about Auditory Processing Disorder (APD) did participants consider themselves?

Two hundred and thirty-one participants completed this question. The overall results from all participants can be found in Figure 1. The majority of the participants considered themselves to be poorly or very poorly informed about APD.



**Figure 1: Overall self-rating of how well informed all professions consider themselves to be about APD**

A breakdown of each profession’s self-rating about how well informed they are about APD can be found in Figure 2. The majority of all participants considered themselves to be poorly or very poorly informed about APD (74% of SLTs, 78% of AS and 50% of EPs) and a minority considered themselves adequately to well informed.



**Figure 2: How well informed does each profession consider itself to be about APD?**

### What training have the participants received in APD?

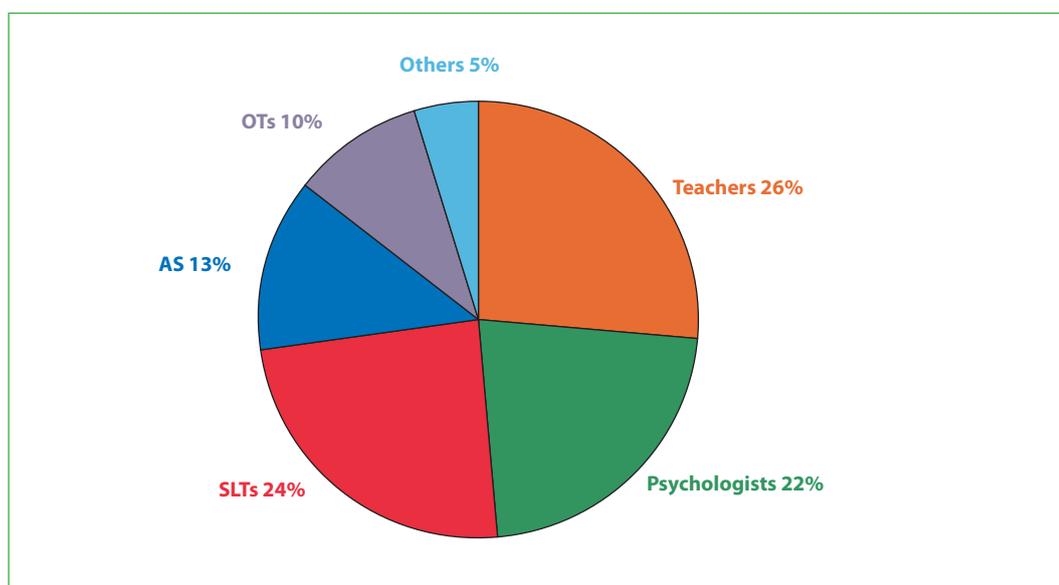
This was an open-ended question, participants were asked to list any formal or informal education which they had received. The respondents indicated that 21% had received training in APD in pre-registration education, 67% had received education through continued professional development (CPD) and 14% reported that they learned about APD through self-directed reading. Examples of CPD activities reported were attendance at courses on phonological awareness, the psycholinguistic model, listening programmes and shared information from conferences through in-service training.

### Do participants discuss APD with colleagues within their own profession?

Two hundred and thirty-six participants answered this question. One hundred and thirty-six (57.63%) participants (n =121 SLT, n= 8 EP, and n=7 AS) stated they discussed APD with colleagues in their profession. One hundred (42.37%) participants (83 SLT, 15 EP, and 2 AS) stated they did not.

### Did participants discuss APD with other professionals?

Two hundred and thirty-six participants completed this question. 37% of participants (n=71 SLT, n= 9 EP, and n=7 AS) indicated they discussed APD with other professionals with 63% of participants (n=133 SLT, n=14 EP, and n=2 AS) indicating that they did not. A further breakdown can be found in Figure 3.

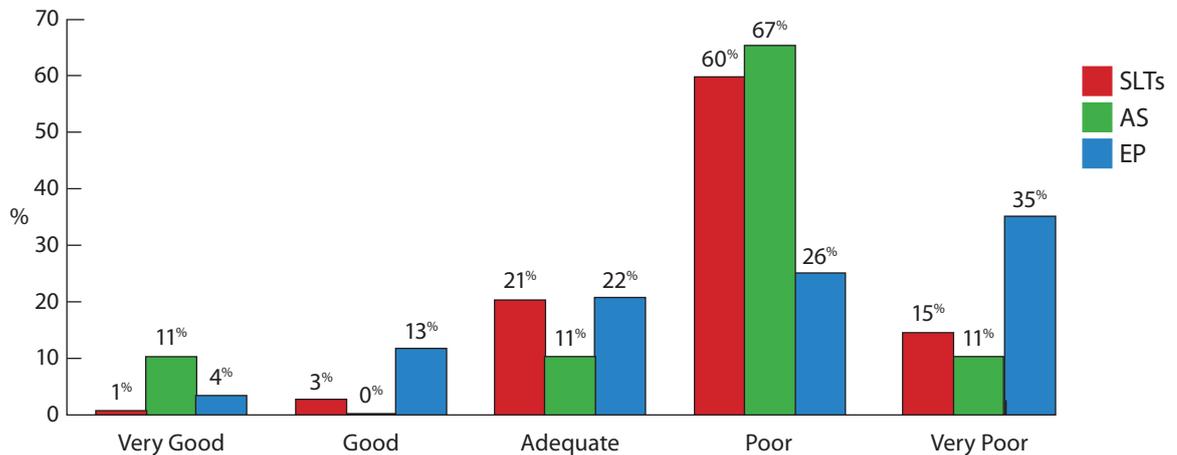


**Figure 3:** A breakdown of the professions with whom respondents discussed APD

*\*Legend: OTs = occupational therapists. Others included physiotherapists, special needs assistants, area medical officers, psychiatric nurses, ear nose and throat consultants, special educational needs organisers, early education staff, respite staff and social workers.*

### How did participants rate their current knowledge and skills to assess APD?

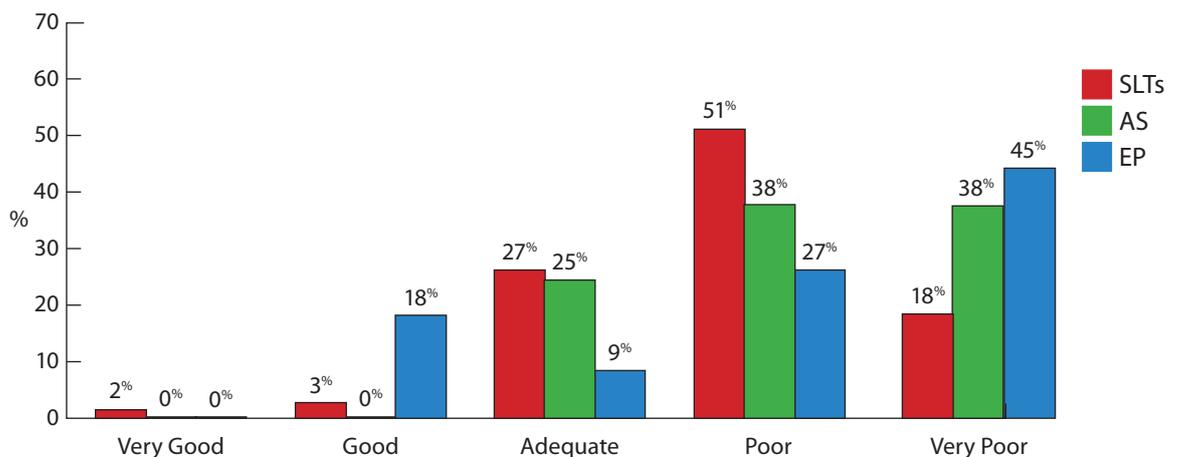
Two hundred and thirty-three participants answered this question and the results can be found in Figure 4 which shows a breakdown of each profession’s current knowledge and skills to assess children with APD. The majority (74%) of participants indicated that their current knowledge and skills for assessment of APD were poor to very poor with 26% indicating good to adequate knowledge and skill for assessment.



**Figure 4: Each profession’s rating of current knowledge and skills to assess children with APD**

### How did participants rate their current knowledge and skills to treat APD?

Two hundred and twenty-eight participants completed this question and the results can be found in Figure 5 which shows a breakdown of each profession’s current knowledge and skills to treat children with APD. The majority (69%) of participants indicated that their current knowledge and skills for treatment of APD were poor to very poor with 31% indicating good to adequate knowledge and skill for assessment.



**Figure 5: Each profession’s rating of current knowledge and skills to treat children with APD**

### Were participants aware of an APD service in Ireland?

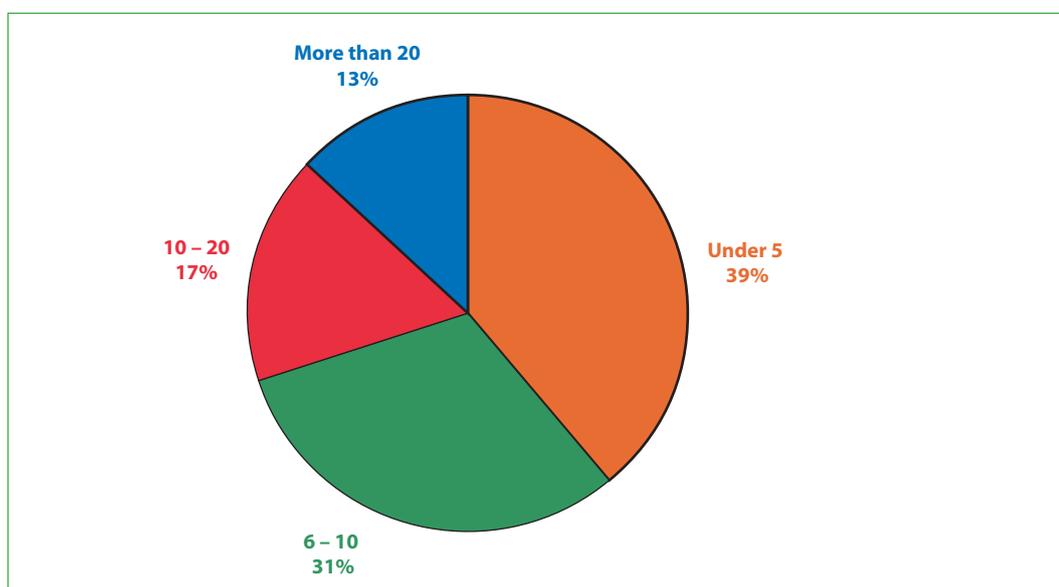
Two hundred and thirty-seven participants answered this question. 5% of the participants (n=11 SLT and n=1 EP) indicated they were aware of an APD service in Ireland and a breakdown of their awareness of the types of service available in Ireland can be found in Table 6. Of this 5% who were aware of services 33% (n=4) were aware of a community based service, 50% (n=6) were aware of a private service and 8% (n=1) was aware of a hospital based service. 95% (n=194 SLT, n=22 EP, and n=9 AS) of the participants were not aware of APD services in Ireland.

**Table 4: Awareness of type of APD service available in Ireland**

Type of service	%(n)
Identification Service	25% (n=3)
Intervention service	17% (n=2)
Identification and intervention service	58% (n=7)

### Respondents' awareness of children in their current caseload requiring screening for APD

Two hundred and twenty-three participants completed this question and the results are displayed in Figure 6. 60% of participants had more than six children on their caseload requiring screening for APD.



**Figure 6: Numbers of children on current caseloads requiring screening for APD**

### Do respondents currently screen for APD?

Two hundred and thirty participants answered this question. The majority of respondents, 78% (n=179), do not currently screen for APD with only a minority of participants, 22% (n=51), currently screening for APD. When asked why they do not currently screen for APD, the greater percentage of respondents (81%) indicated that this was due to inadequate training and lack of resources.

Respondents reported that they used the following as screening tools:

- Specific APD assessments
- Standardised language and psychometric assessments
- Phonological awareness assessments

The informal screening techniques used were the psycholinguistic framework, informal assessment including checklists, observation of the children, and consultation with other professionals and parents.

### Did participants diagnose APD?

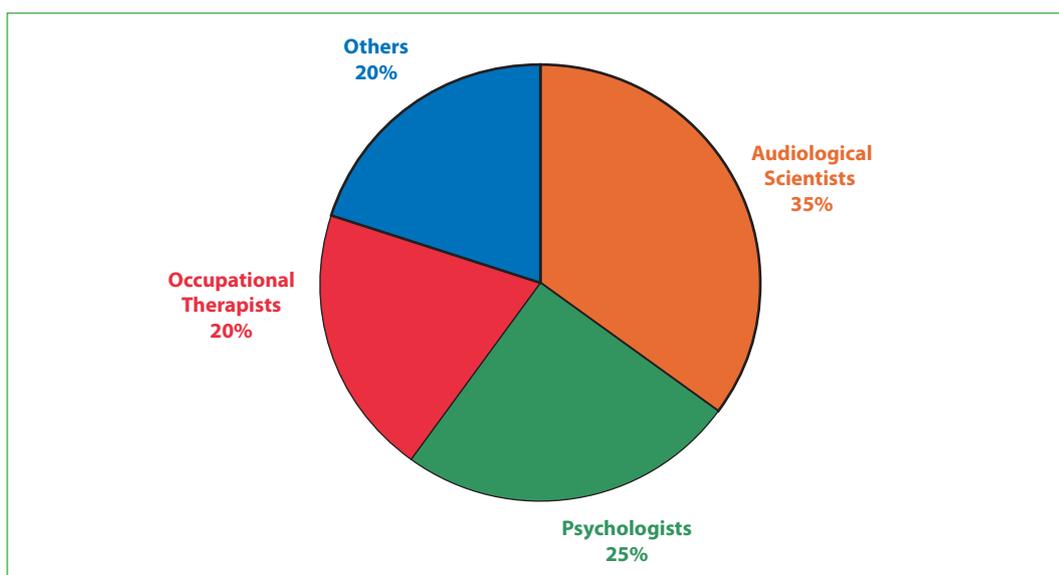
Two hundred and thirty-six participants completed this question. Of these participants, 97% indicated that they do not diagnose APD. Of the 3% who indicated that they diagnose APD, all were SLTs (n=6).

### Did participants provide management for children suspected of APD?

Two hundred and thirty-two participants answered this question, with 48% of participants (n=104 SLT, 6 EP, and 1 AS) stating that they provide management for children suspected of APD and 52% of participants (n=97 SLT, 16 EP, and 8 AS) stating they did not.

Of the 48% who provided management for children suspected of APD, for the majority of respondents (n=92 SLT, 6 EP, and 1 AS) this consisted mainly of providing advice. Only 1% of this group rated the advice as “very effective”, 24% rated it as “effective”, 42% considered it was adequate, and 33% rated the advice as “somewhat ineffective.” 7% of the participants indicated they did not provide management for children suspected as having APD.

Participants were asked if they make onward referrals of children who they suspect may present with APD. The professional group who made the most onward referrals was speech and language therapists and the onward referrals which they make are displayed in Figure 7.



**Figure 7: Onward referrals made by SLTs**

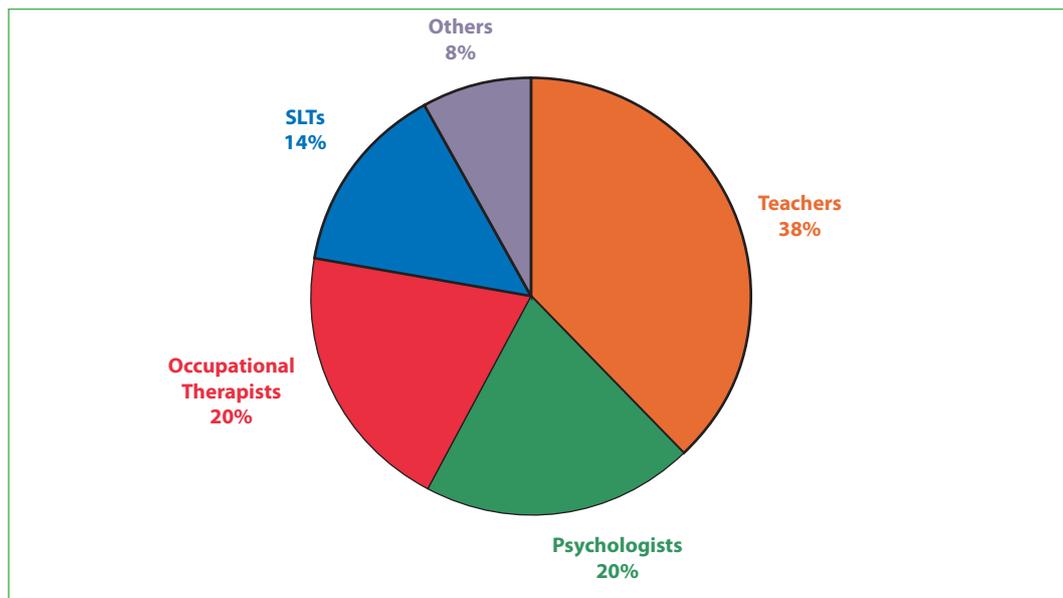
Additionally three audiological scientists made onward referrals to another audiological scientist (n=1) and to speech and language therapists (n=3).

If participants provided management for children suspected of APD, did they discuss possible management with other professionals?

102 participants completed this question of whom 60% (n=58 SLT, 2 EP, 1 AS) indicated they discussed possible management with other professionals and 40% of participants (n=38 SLT, 3 EP) reported they did not.

If participants provided management for children suspected of APD and discussed possible management with other professionals, with whom did they discuss possible management?

Figure 8 details this information for those SLT participants providing management for children suspected of APD and discussing possible management with other professionals.



**Figure 8: Professions with whom SLTs discuss possible management of children suspected with APD**

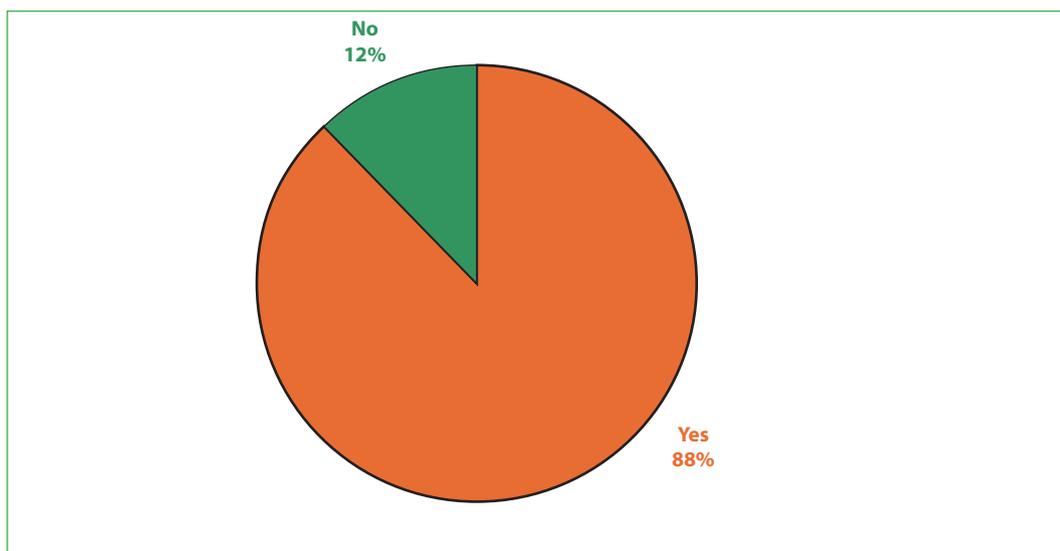
In addition audiological scientists (n=2) discuss APD with teachers (n=2). Educational psychologists (n=2) discuss APD with teachers (n=1) and speech and language therapists (n=2).

#### Did participants provide management for children diagnosed with APD?

Two hundred and twenty-seven participants completed this question, with 12% of participants (n=25 SLT, 2 EP, and 1 AS) stating that they provided management for children diagnosed with APD and 88% of participants (n=199) participants stating they did not.

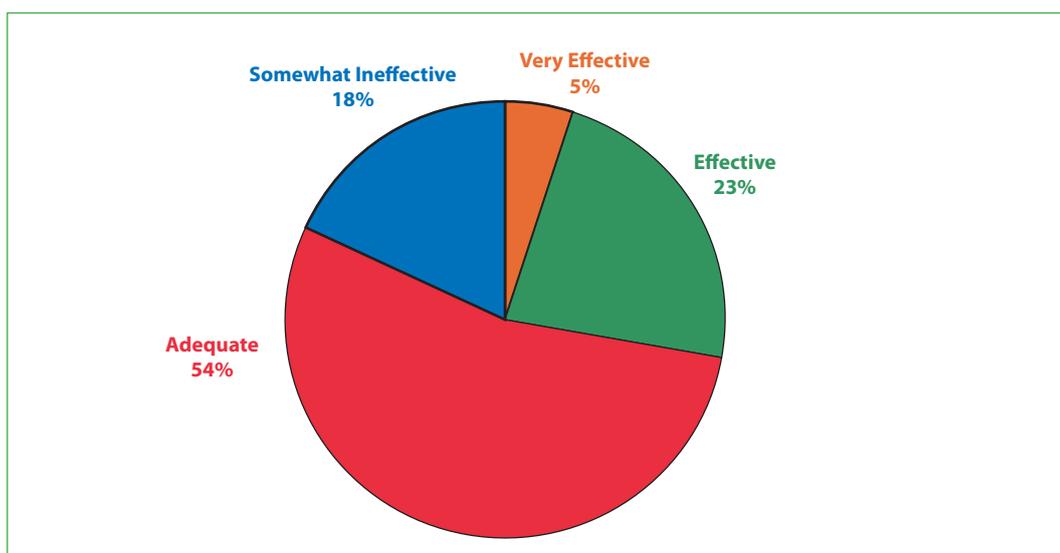
#### If participants provided management for children diagnosed with APD, did they provide advice for children diagnosed with APD and how effective did they consider this advice to be?

Twenty-six participants answered this question and the results can be found in Figure 9. The majority of respondents provided advice.



**Figure 9: Percentage of respondents who provided advice on APD**

Respondents rated the effectiveness of the advice given and the results can be found in Figure 10. The majority of respondents considered that the advice was adequate.



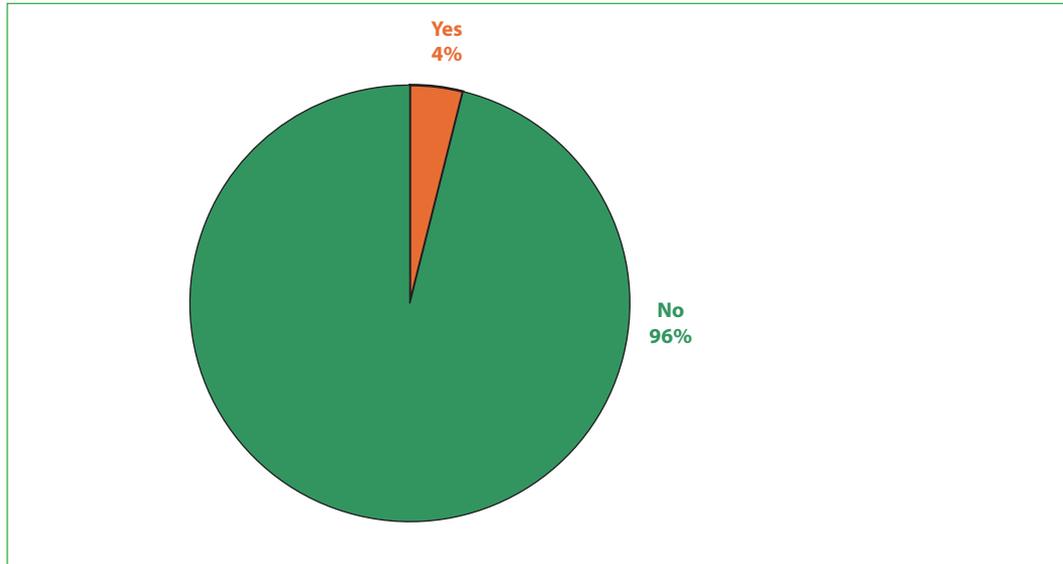
**Figure 10: Percentage of respondents rating on the effectiveness of advice given**

If participants did provide management for children diagnosed with APD, did they provide a programme of therapy?

75% of participants (n=17 SLT and 1 EP) stated they provided a programme of therapy with 25% (n=5 SLT and 1 EP) reporting that they did not.

### What was the diagnostic pathway for children on current caseloads with a formal diagnosis of APD?

The majority of respondents did not have children with a formal diagnosis of APD on their current caseloads (See Figure 11).



**Figure 11: Percentage of participants who have children on their current caseload with a formal diagnosis of children with APD**

Of the 4% (n=6) who had children on their caseloads with a diagnosis of APD, three participants stated the diagnosis was made in the U.S.A or U.K. Three participants stated that the diagnosis was made in Ireland but the responses on the survey were not specific regarding the nature of the services involved. The original referral sources which led to a diagnosis were teachers (n=3), SLTs (n=2) and AS (n=1).

### First steps to developing an effective service for children with APD in your clinical setting and on a national level. Number 13 on the survey.

Two hundred and forty four participants answered this question, with more than 32% of them indicating the first step being a need for a specialist centre for the diagnosis of APD with a multidisciplinary team and agreed guidelines, pathways and criteria of referral for diagnosis and management. Of the respondents, 23% indicated the first step as being the need for training and information for the existing professionals including teachers and 12% indicated the first step as a need for additional resources in terms of personnel, time and materials for screening, assessment and intervention. The remaining 33% of respondents indicated first steps as the need for research, identification of need through screening, further discussion groups, support groups for clients and professionals or a funded pilot scheme.

## Phase 2: Qualitative Strand

### Results of Phase Two

In total 112 professionals participated in this event (77 Speech and Language Therapists; 14 Audiological Scientists and 3 Audiologists; 2 Educational Psychologists; 2 Occupational Therapists; 6 Presenters; 1 Primary Care Specialist, Office of the CEO, HSE; 1 Speech and Language Therapy Lecturer; and 5 members of APD Ireland Research Group) all facilitated by a Group Facilitator.

The data collected at the facilitated, large-scale, one-day event was coded into 4 thematic categories which are:

1. Reflections on the information-giving session
2. Ideal pathway for integrated APD service in Ireland
3. Facilitators and barriers to the development of an ideal integrated pathway of care
4. Key prioritised actions for the development of an ideal integrated pathway of care

#### ***Theme 1: Reflections on the information-giving session***

Participants reported that they were striving to provide services to children with complex needs e.g. specific language impairment (SLI), attention deficit and hyperactivity disorder (ADHD) and autistic spectrum disorder (ASD). However they were concerned that they were not doing enough to provide a targeted service to children with APD because they did not feel well informed about this disorder. They also reported frustration at the lack of services and resources for the assessment, diagnosis and intervention for children with APD in Ireland. They noted the lack of personnel, in particular the acute shortage of audiology professionals, as well as issues such as time, access to diagnostic assessment procedures and therapeutic resources.

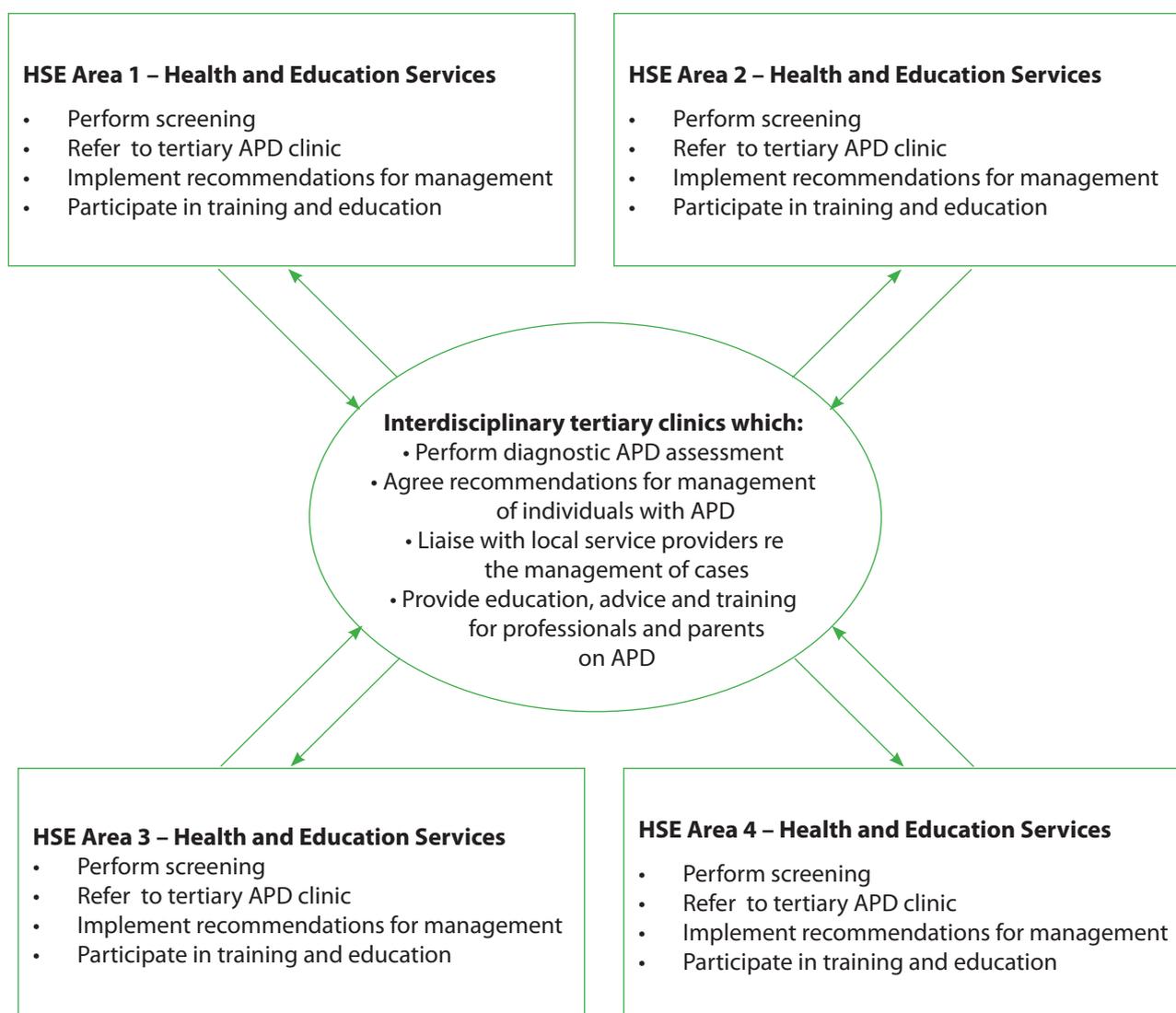
Participants were relieved that this interdisciplinary event provided a unique opportunity to develop a shared understanding of APD and the commencement of discussions on the development of a service for these children in Ireland. Participants reported that children with APD require an interdisciplinary approach and therefore the solution must involve all key disciplines. There is a need to develop strong collaborative working relationships with a range of disciplines which will require clearer understanding of the respective roles of key professionals.

They identified a need for a clear pathway including referral, screening, diagnostic assessment and management and some participants considered that there is a need for a tertiary center for the diagnosis of APD. One group also indicated the need to consider APD in adults with acquired disorders. The one-day event highlighted the value of liaising with UK colleagues in the field where assessment tools are currently being developed which would be more culturally appropriate for the Irish context.

All participants identified a need for training of all key professionals in health and education on APD at undergraduate and postgraduate level. Information also needs to be disseminated to other professionals e.g. GPs, teachers, and to parents. A need was also identified for further research and a strong evidence base for the diagnosis and effective management of children with APD.

**Theme 2: Ideal pathway for integrated APD service in Ireland**

Participants reported that they agreed with the findings of the survey in phase one of this study i.e. they confirmed that they did not consider themselves to be well informed about APD and there were no identified pathways of care or services available for children with APD. Using the data from the earlier information session, the participants then designed an ideal pathway of care for children with APD in Ireland. The APD Research group represented this pathway using Bellis (2003) service delivery model (See Figure 12).



**Figure 12: The Ideal pathway of care**

This model (adapted from Bellis, 2007) includes local health and education services, including primary care, and an interdisciplinary tertiary clinic, with the functions and interactions of each outlined above.

Within each of the HSE Primary Care areas, professional teams would:

- Perform screening (using standardised formal screening tools)
- Refer to tertiary APD clinic (following a nationally agreed protocol)
- Implement recommendations for management (as outlined by the tertiary APD Team)
- Take part in training to increase knowledge and skills about APD, participate in research and audit of the APD service, and contribute to ongoing development and review of the overall service.
- Liaise and collaborate with education staff

The Interdisciplinary tertiary clinic would operate on a national level and liaise directly with primary care teams. This interdisciplinary tertiary team would:

- Perform diagnostic APD assessment
- Agree recommendations for management of individuals
- Liaise with local service providers regarding the management of cases
- Provide education, advice, and training for professionals and parents. This could include GP, PHN, AMO, Psychology NEPS, Teachers and other ancillary HSE and educational staff

***Theme 3: Facilitators and barriers to the development of an ideal integrated pathway of care***

Participants identified the following facilitators to the development of an ideal integrated pathway of care :

- Interdisciplinary interest in developing an APD service as illustrated by the response to the survey and the high attendance at this one-day event
- Access to current research in the field of APD and the current development of a screening tool by UK colleagues, which could be used in Ireland

Participants identified the following barriers to the development of an ideal integrated pathway of care :

- Lack of resources including culturally appropriate screening and diagnostic tools
- Lack of access to key professionals involved in the diagnosis and management of APD in particular audiological scientists. Current audiology services are focused on assessment of hearing acuity.
- While strategic plans indicate the need for interdisciplinary and interagency working, the current thinking and practices are primarily uni-disciplinary and there is little collaboration between health and education at all levels. Participants

indicated that they would need further education on the roles of the disciplines involved in service delivery

- Lack of training opportunities to develop knowledge and skills for working in this area

***Theme 4: Key prioritised recommendations for the development of an ideal integrated pathway of care***

Each group identified key actions required to develop an integrated service for APD in Ireland and then each participant prioritised the top three actions in their group. This data was collated and the total number of votes was calculated for the actions identified in each group. Following this process votes from all of the groups were calculated and the following seven priority recommendations emerged. They are presented in order of priority as identified by participants.

**RECOMMENDATION 1**

**To promote and develop interdisciplinary working at local and tertiary levels to provide an integrated, holistic service for children with APD (Total: votes 88).**

**Specific actions to facilitate the main recommendation included:**

- Continuation of interdisciplinary APD Research Group to facilitate and promote dialogue, information-sharing, and further planning.
- Organisation of further interdisciplinary information-sharing events similar to this event.
- Establishment of an interdisciplinary tertiary clinic which would:
  - » Perform diagnostic APD assessment
  - » Agree recommendations for management of individuals
  - » Liaise with local service providers regarding the management of clients
  - » Provide education, advice, and training for professionals and parents on APD
  - » Facilitate a clear pathway whereby local health and education service providers could carry out screening assessment and could refer children with suspected APD for further diagnostic assessment and management to the tertiary interdisciplinary clinic.
- Develop a register of professionals working with children with APD in Ireland at a national and local level.

**RECOMMENDATION 2**

**There is need for additional resources to develop services for children with APD in Ireland (83 votes).**

Specific actions to facilitate this recommendation included:

- Additional human resources, especially audiological scientists. Participants identified the need to develop postgraduate education programmes to train audiological scientists in Ireland.
- The availability of specialist equipment for the assessment, diagnosis and intervention for APD.
- The availability of funding to implement the recommendations of this study.

**RECOMMENDATION 3**

**To establish interdisciplinary training programmes for all professionals involved in the management of APD working in the health and education services and identify key professionals in each region who would act as a resource for practitioners in that area (59 votes).**

- This training should be provided in an interdisciplinary manner at undergraduate and postgraduate level and could involve liaising with established APD practitioners and clinics internationally. There is also need to provide information to parents and other health and education professionals. for example, GPs and teachers.

**RECOMMENDATION 4**

**Inform all stakeholders of the current working definition of APD and make diagnostic indicators explicit (votes 43).**

A specific action to facilitate the main recommendation included:

Further development and availability of sensitive screening tools.

**RECOMMENDATION 5**

**Further research is needed to develop an evidence base for assessment and management of APD (votes 25).**

A specific action to facilitate the main recommendation included:

- Accessing best practice internationally.

### **RECOMMENDATION 6**

**Children with APD may require additional educational resources to meet their specific needs, including intervention focused specifically on the child's impairment and the classroom environment (votes 7).**

A specific action to facilitate the main recommendation included:

- Criteria for eligibility for such resources need to be developed and agreed between policy makers in health and education.

### **RECOMMENDATION 7**

**There is need for a national awareness programme to promote knowledge and understanding of APD (votes 3).**

## Section 5: The Way Forward

### Review of the research process

The APD Ireland Research Group carried out this research in response to a perceived gap in services for children with APD in Ireland. The research investigated current levels of service provision and identified the first steps in setting up an integrated service for children with APD.

The high response rate to the survey and the excellent attendance rates of the three key disciplines from all geographical areas in Ireland at the facilitated one-day event indicate that there is a national interest in APD. The results of this research confirms that there is a consensus among the key professionals involved in this study that there is a gap in service provision for these children. In addition, these professionals are highly motivated and interested in creating evidence based recommendations for the development of an integrated service in Ireland. Throughout the study it emerged that the key professionals are striving to address clients' needs, but in the area of APD progress is impeded and frustrated due to inadequate training, knowledge and resources to do so. However they are already attempting to address this gap through self-directed reading, attendance at training events, and discussing APD with other professionals. There is also evidence that there needs to be collaboration between the Department of Education and Science and the Department of Health and Children and the Health Services Executive as the needs of children with APD necessitates involvement of professionals in health and education.

The strengths of this research were:

- Inter-professional and interagency research team with geographical representation.
- The research team accessed with ease support and guidance from experienced researchers and practitioners. This included support from the UK APD Interest Group and their research teams.
- Strong validity of the results as indicated by high response rate to the survey and high attendance at the facilitated one-day event
- Excellent use of available networks for distributing information about this research.
- Flexibility in procedures to collect survey data
- Funding was received from the HSE and there has been interest and consultation with the HSE throughout this research.

- The availability of funding allowed the research team to invite expert researchers in APD and enabled them to subsidise the cost of the day for participants.
- The research team responded to interest from professionals not included in Phase 1, for example, occupational therapists.
- All stakeholders (Audiological Scientists, Primary Care Specialist HSE, Speech and Language Therapists, Educational Psychologists, Occupational Therapists) in the system were represented at the event, reflecting the whole system.
- The format of the facilitated one-day event maximised interdisciplinary discussion and further data collection.
- The research team adhered to the project management plan.

A limitation of this research was that not all of the key stakeholders were included in the research. We identified from the international literature three main disciplines involved in the management of APD, however, in future research it would be useful to involve other stakeholders such as occupational therapists, teachers, GPs and parents.

## Key findings and discussion

The APD Ireland Research Group achieved their research aims:

- i. Current lack of service provision for children with APD in Ireland has been confirmed
- ii. The recommendations of the key stakeholders involved in the diagnosis and treatment of APD in school-aged children has been identified.

A number of actions have been identified to support key recommendations. Some of these actions will require significant investment while others will require less. Some actions will require considered and targeted redirection of existing resources. All actions aim to maximise use of available resources. For example it is highly probable that children with APD in Ireland are already accessing services for their communication and/or educational and social/emotional difficulties. However without the availability of differential diagnosis of APD within existing service provision interventions provided for these children can be symptomatic and do not specifically target their underlying auditory processing difficulties. Thus a direct consequence of lack of availability of specific diagnosis for APD may be that existing resources are being used less effectively than might otherwise be the case, unintentional misappropriate use of existing resources.

The provision of an APD service would enhance the effectiveness and efficiency of service provision for clients and professionals and target resources more appropriately.

The recommendations for the HSE are clear and evidence based and will inform future action and implementation plans and funding for the development of an integrated service for children with APD in Ireland. It is essential at this stage to set up an implementation group.

One of the key strategic priorities of the Health Service Executive Transformation Programme is to *“allow people to live healthier more fulfilled lives”* with *“easy access to high quality care and services”*. (HSE, 2006: 7). These priorities are reiterated in the Primary Care Strategy (Department of Health, 2001) which promotes among its goals:

- an integrated interdisciplinary, high quality, team-based and user friendly set of services for the public with an enhanced capacity for primary care using a team-based approach which will build capacity in primary care and contribute to sustainable health and social development.

A main recommendation of this research is that there is a need to promote and develop interdisciplinary working at local and tertiary levels to provide an integrated, holistic service for children with APD.

The drive towards centres of excellence within the HSE is well documented. The provision of such centres is seen to be much more effective in terms of both clinical outcome measures and use of resources, and the proposed Ideal Care Pathway which emerged from phase 2 (p36) reflects this ethos.

The ideal care-pathway outlined highlights the need to develop services at a local and tertiary level.

The ability of our current services and staffing levels to adopt this new structure is at present unclear and is beyond the scope of this research study however it could form the basis of any future implementation projects undertaken.

The current health and education policy context provides an ideal platform to progress the recommendations of this research and address the current lack of a service for APD in Ireland. The Education for Persons with Special Educational Needs Act, 2004 and the Disability Act, 2005 sets out a new approach to assessing the needs of eligible persons with disabilities and/or special educational needs for health and/or educational services. The current provision of the Disability Act targets the 0-5 year old age group and by 2009 it is envisaged that the provision under the act will include 6 - 18yr olds. One of the strategic priorities of the Department of Education and Science is to provide an inclusive school environment in which children's needs can be met and where they *“can feel safe, feel they belong, feel communicated with and can communicate and feel valued”* (Department of Education and Science 2006: 3).

Clients' needs within an APD service will necessitate the integration and collaboration of elements from both health and education services. The implementation process

of the stated recommendations in this report involves two government departments providing different and overlapping elements of a service. These overlapping elements will need to be addressed, in order to provide and maintain ease of access of service delivery for both clients and professionals involved.

The results indicate that it is imperative to train and educate the professionals involved as the majority of participants felt that they are not adequately equipped in the management of this disorder. It is a relatively new area of expertise worldwide, and as revealed in the results of phase 1 of this research project there are many professionals for whom training has been through varying CPD arrangements and through self-directed learning. This ad hoc approach has affected both the level of knowledge and confidence in dealing with this disorder. As part of the implementation process of the recommendations above it would be necessary to ascertain how APD is currently addressed in the relevant undergraduate or post graduate education programmes. Multidisciplinary undergraduate and post graduate training courses with an agreed content would be an important issue to be considered. This would empower local health and education professionals in the overall management of children with suspected APD. This would also ensure that appropriate referrals would be made to a tertiary centre thus avoiding inappropriate referrals and efficient and effective use of resources.

Other key recommendations are a need for additional resources and the need to establish interdisciplinary training programmes for all professionals. The interdisciplinary and interagency one day event held as the procedure for phase 2 of this research project is an excellent example of training and awareness development which could be replicated in the future.

## The Next Steps

There is an immediate need for:

- Dissemination of the findings of this research to the participants of the study, practitioners and teachers, and with HSE agreement in academic fora (peer reviewed journals, conferences and poster presentations).
- An agreed funding to support the continuation of the APD Ireland Research Group so that the momentum and interest of the pertinent professionals involved in APD services can be sustained and utilized to address this identified gap in services.
- The setting up of an implementation group to progress the development of an APD Service.
- Relevant managers within the pertinent disciplines of the key stakeholders to include APD services in their service plans.

This research project has provided a forum to highlight the significant gap in service provision for children in Ireland. As a result of participating in the research project several of the key stakeholders in child health services are more informed and aware of APD and are highly interested and motivated in moving forward in the development of an integrated multidisciplinary service in Ireland. Following the research over 30 participants expressed an interest in becoming actively involved in supporting any future work/training/research in APD. This interest needs to be utilized by engaging these interested personnel in each HSE region to keep APD on local agenda. Further funding is required to support and facilitate the continuation of the APD Ireland Research Group and to facilitate the implementation of the recommendations of this research. This work would include further interdisciplinary and interagency education events and further research on the development of services for APD.

We need to continue to work together *“all the while searching for illumination and understanding of better ways to serve our children.”*

(Bellis, 2007: pg.xiii)



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# Appendix 1

## NUIG/HSE/APD Ireland Research Group Survey of Auditory Processing Disorder Phase 1



**NUIG / HSE / APD INTEREST GROUP (IRELAND)**

**SURVEY OF**

**AUDITORY PROCESSING DISORDER (APD)**

## Survey of Auditory Processing Disorder

**Instructions:** Please answer the following questions by circling the answer of your choice.

**Q1. In your opinion, how well informed are you about APD?**

- |   |                    |   |               |   |                     |   |                 |   |                       |
|---|--------------------|---|---------------|---|---------------------|---|-----------------|---|-----------------------|
| 1 | Very well informed | 2 | Well informed | 3 | Adequately informed | 4 | Poorly informed | 5 | Very poorly informed. |
|---|--------------------|---|---------------|---|---------------------|---|-----------------|---|-----------------------|

**Q2. Do you discuss APD with colleagues in your profession?**

- |   |     |   |    |
|---|-----|---|----|
| 1 | Yes | 2 | No |
|---|-----|---|----|

**Q3. Do you discuss APD with other professionals?**

- |   |     |   |    |
|---|-----|---|----|
| 1 | Yes | 2 | No |
|---|-----|---|----|

If Yes, please circle which ones. You may choose more than one option.

- |   |                              |   |                         |   |                                  |
|---|------------------------------|---|-------------------------|---|----------------------------------|
| 1 | Teachers                     | 4 | Physiotherapists        | 7 | Other. If other, please specify. |
| 2 | Psychologists                | 5 | Audiological Scientists |   |                                  |
| 3 | Speech / Language Therapists | 6 | Occupational Therapists |   |                                  |

**Q4. (a) Please indicate all formal training you have received in APD (e.g. attendance at courses, workshops etc.) Please specify i) what the training course was; ii) where and when it took place; and iii) who provided it.**

- |     |  |     |  |
|-----|--|-----|--|
| i   |  | i   |  |
| ii  |  | ii  |  |
| iii |  | iii |  |

**(b) Please indicate all informal training you received in APD (e.g. reading literature, discussion with colleagues etc.). Please specify i) what the training was.**

- |   |  |   |  |
|---|--|---|--|
| i |  | i |  |
|---|--|---|--|

**Q5. (a) How would you rate your current knowledge and skills to assess children with APD?**

**(a) Assessment**

- |   |           |   |      |   |          |   |      |   |           |
|---|-----------|---|------|---|----------|---|------|---|-----------|
| 1 | Very good | 2 | Good | 3 | Adequate | 4 | Poor | 5 | Very poor |
|---|-----------|---|------|---|----------|---|------|---|-----------|

**(b) How would you rate your current knowledge and skills to treat children with APD?**

**(b) Treatment**

- |   |           |   |      |   |          |   |      |   |           |
|---|-----------|---|------|---|----------|---|------|---|-----------|
| 1 | Very good | 2 | Good | 3 | Adequate | 4 | Poor | 5 | Very poor |
|---|-----------|---|------|---|----------|---|------|---|-----------|

### Survey of Auditory Processing Disorder

**Q6. As a professional working with children, are you aware of an APD service within Ireland?**

**1** Yes **2** No

If Yes, please complete parts (a) and (b). If No, please go to Question 7.

**(a) Indicate which service by circling one of the options below:**

**1** Identification of APD only **2** Intervention of APD only **3** Both identification and intervention

**(b) Indicate the service provision by circling any of the options below:**

**1** Community based **2** Private **3** Hospital based

**Q7. How many children in your caseload would you think require screening for APD?**

**1** 0-5 **2** 6-10 **3** 11-20 **4** More than 20

**Q8. Do you screen for APD?**

**1** Yes **2** No

If Yes, please answer (a) and (b). If No, please answer (c).

Do you use:

**(a)What Standardized Screening Techniques do you use, if any? (please specify)**

**(b)What Informal Screening Techniques do you use, if any? (please specify)**

**(c) If No, please explain why not (please specify)**

### Survey of Auditory Processing Disorder

#### Q9. Do you diagnose APD?

1 Yes  2 No

If Yes, please answer (a), (b) and (c). If No, please go to Question 10.

Do you use:

#### (a) What Standardized Techniques do you use, if any? (please specify)

#### (b) What Informal Techniques do you use, if any? (please specify)

#### (c) If you do not use either formal or informal techniques for diagnosis, can you indicate what you do use (please specify)

#### Q10. Do you provide management for children suspected of APD?

1 Yes  2 No

If Yes, please answer parts (a), (b), (c) and (d). If No, please go to Question 11.

#### (a) Do you provide Advice?

1 Yes  2 No

If Yes, do you prepare individualised advice? (Please give examples).

- 1.
- 2.
- 3.
- 4.
- 5.

If Yes, do you give prepared Advice Sheets (Please give examples).

- 1.
- 2.
- 3.
- 4.
- 5.

#### (b) How effective do you feel this advice is?

1 Very effective  2 Effective  3 Adequate  4 Somewhat ineffective  5 Not effective

### Survey of Auditory Processing Disorder

#### (c) Do you provide onward referral.

1 Yes  2 No

If Yes, please indicate to whom (Feel free to list as many people as appropriate).

#### (d) Do you discuss possible management with other professionals?

1 Yes  2 No

If Yes, please indicate with whom (Feel free to list as many people as appropriate).

### Q11. Do you provide management for children diagnosed with APD?

1 Yes  2 No

If Yes, please answer (a), (b), (c) and (d). If No, please go to Question 12.

#### (a) Do you provide Advice?

1 Yes  2 No

If Yes, do you prepare individualised advice? (Please give examples).

- 1.
- 2.
- 3.
- 4.
- 5.

If Yes, do you give prepared advice sheets (Please give examples).

- 1.
- 2.
- 3.
- 4.
- 5.

#### (b) How effective do you feel this advice is?

1 Very effective  2 Effective  3 Adequate  4 Somewhat ineffective  5 Not effective

#### (c) Do you discuss possible management with other professionals?

1 Yes  2 No

If Yes, please indicate with whom (Feel free to list as many people as appropriate).

#### (d) Do you provide a programme of therapy?

1 Yes  2 No

If Yes, please list programmes used:

- 1.
- 2.
- 3.

## Survey of Auditory Processing Disorder

## Q12. Do you have children on your caseload with a formal diagnosis of APD?

1	Yes	2	No
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If Yes, please complete (a), (b) and (c).  
If No, please go to Question 13.

## (a) Where was the diagnosis made? Please specify.

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## (b) If you know which professionals were involved in the diagnosis of these children please specify. If required, circle more than one option.

1	Teacher	4	Occupational Therapist	7	Audiological Scientist
2	Psychologist	5	Physiotherapist	8	Other. If other please specify.
3	Speech / Language Therapist	6	ENT		

## (c) What was the original referral source for these children. Please specify by circling any of the following options.

1	Not applicable	5	Psychologist	9	Audiological Scientist
2	ENT	6	Parent	10	Don't know
3	Speech / Language Therapist	7	Paediatrician	11	Other. If other please specify.
4	Teacher	8	General Practitioner		

Q13. In your opinion, what would be the first steps to developing an effective service for children with APD in your clinical setting?

1.	
2.	
3.	
4.	
5.	

Q14. In your opinion, what would be the first steps to developing an effective service for children with APD on a national level (within Ireland)?

1.	
2.	
3.	
4.	
5.	

**Survey of Auditory Processing Disorder**

**Thank you for taking the time to complete this questionnaire. Please return in the enclosed freepost envelope to:**

**Licence GA 334  
Research Project  
Department of Speech and Language Therapy  
Áras Moyola  
National University of Ireland  
Freepost.  
Galway**

## Appendix 2

Programme of facilitated one-day event, Phase 2.





**NUIG/HSE/APD INTEREST GROUP (IRELAND)**

**STUDY DAY—Programme for the Day.**

**Date:** Thursday 10th January, 2008

**Venue:** Royal Dublin Hotel, 40 Upper O’Connell Street, Dublin 1

**Times:** 9am ->9.30am Registration.  
 9.30am Opening address.  
 4.30pm Concluding remarks

**Cost:** €40.00 – (a hot lunch will be provided)

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**SPEAKERS AND DETAILS AND OF PRESENTATIONS .**

**Dr. Sally Hind-** Developmental Psychologist. Institute of Hearing Research, Nottingham U.K. and current chair of the BSA APD Interest Group, UK. -*The Journey of APD in the UK. To include introduction to APD, background to the journey, problems encountered, resolving the problems. Current happenings re APD in the UK.*

**Ms. Melanie Ferguson** - Principal Audiological Scientist, Institute of Hearing Research and Head of the Nottingham Clinical Section which aims to translate lab-and clinical research to a clinical context.-*The research focus in IHR aiming to develop a test battery for APD.*

**Ms. Dilys Treharne-** Lecturer and Speech and Language Therapist, Department of Human Communication Sciences, University of Sheffield.- *The diagnosis and intervention process for children with APD from a cognitive, behavioural perspective and as an SLT.*

**Dr. Doris Bamioiu-** Consultant in Audiological Medicine. Department of Neuro-otology, National Hospital for Neurology and Neurosurgery, and Honorary Senior Lecturer at UCL Institute of Child Health. - *The procedure to setting up APD clinics in the UK, the structure of an APD clinic.*

**Dr. Maggie Vance** - Department of Human Communication Sciences, University of Sheffield - *Auditory processing difficulties in children with language impairments.*

**Ms. Maria Logue-Kennedy-** Lecturer and Audiological Scientist, Department of Speech and Language Therapy NUI Galway and current chairperson of APD Interest Group (Ireland).- *NUIG/HSE APD Research Project- Results of Phase 1.*

**Ms. Libby Kinnear** - Head of Organisational Design and Development, HSE West.- *will facilitate discussion forum on the development of an integrated service for APD in Ireland*

4.00–4.30pm - Plenary Session                      4.30pm-Concluding Remarks

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I will be attending the APD Study Day     I will not be attending the APD Study Day

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**Telephone:** \_\_\_\_\_                      **E-mail:** \_\_\_\_\_

**Discipline:** SLT     Audiological Scientist     NEPS     Other (please specify)

All completed application forms with fee of €40.00 cheque/bankdraft made payable to **NUI Galway** should be sent to: *Celine Gordon, Department of Speech and Language, Áras Moyola, NUI, Galway by 15th December 2007.* If you have any queries please call 091-495470. Thank you.

**Please note: No refund of fee for cancellation of place.**