Frequently asked questions

Audible Contrast Threshold (ACT™)

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ACT™ FAQ

Question	Answer
What is ACT measuring?	The ACT diagnostic test is an above-threshold, non-language specific test that quantifies an individual's real-world ability to hear in noise, with the intention of determining the level of help in noise needed. The test applies the shape and levels of the audiogram to ensure that the correct stimulus intensity is applied. The ACT test then applies a client's audiogram to deliver an above-threshold stimulus (a siren-like sound) to objectively map their hearing-in-noise ability. In other words, where the audiogram measures the quantity, i.e. hearing ability, ACT measures the quality of hearing. This makes ACT a robust assessment that reflects a person's real-world hearing abilities.
When do I perform ACT?	A pure-tone audiogram must be completed prior to performing ACT as the test makes use of pure-tone thresholds to ensure audibility of the ACT stimulus. Most HCPs may choose to perform ACT straight after completing pure-tone audiometry. However, as long as an audiogram is selected, ACT can be performed at any stage of the client journey.
What information do I need from the audiogram to run ACT?	To run ACT, you must have stored air conduction thresholds for the following mandatory frequencies: 250 Hz, 500 Hz, 1 kHz, 2 kHz, and 4 kHz. Inter-octave frequencies will also be considered in ACT testing if they have been completed. Please note that a 'no response' will be factored into the ACT test, but a 'could not test' or 'did not test' will be excluded, and you will not be able to complete the ACT test.

Question	Answer
What equipment do I need to perform ACT?	You will need: • One of the following products which will offer ACT: – Interacoustics Affinity Compact (software version 2.20 onwards) – MedRx AVANT ARC, AVANT A2D+, AWRC, or AVANT (Stealth) – GSI Audio Star Pro • Licensed AC440 audiometry module including an ACT license • Connected PC and keyboard • Headphones or insert earphones • Client response button
Which clients can ACT be performed on?	ACT is intended to be performed on anyone over the age of 18 that can complete pure-tone audiometry. However, since ACT is tested above threshold, there are instances where the HCP should consider whether the test is appropriate for their client. Successfully obtaining an ACT value can be more difficult if your client has: • A severe-to-profound hearing loss • Hyperacusis or severe tinnitus • Less cognitive capacity to focus during the test
Can ACT be performed on the pediatric population?	ACT studies have not been carried out with a pediatric population as of yet. The normative data is based on an adult population only. Therefore, the recommendation is to only perform ACT on clients over the age of 18.
How frequently should I perform ACT on the same client?	As a component of the test battery, ACT can be remeasured: • When the pure-tone audiogram is remeasured, for a variety of reasons • If a user continues to report difficulties hearing speech in noise after their fitting • When a user reports an increase in hearing difficulties

Question	Answer
Does performing ACT mean that I should not perform Real Ear Measurements (REM)?	No, it is still important to perform REMs. ACT will support you in setting the adaptive help features of your client's hearing aid, while REMs will support you in prescribing the correct dose of gain for your client and measuring gain to target.
Does performing ACT mean I do not need to perform a traditional speech in noise test?	The ACT test is a tool for predicting your client's aided speech in noise ability. The measured ACT value can be specifically used to objectively prescribe hearing aid help in noise. The ACT value is also a helpful tool for counseling and benchmarking your client's speech-in-noise abilities to those of other clients. This information is accessible to the HCP early in the client journey before a hearing aid discussion has taken place. With ACT, you are able to provide the appropriate help needed for clients who have difficulty understanding speech in noise. With a traditional speech-in-noise measurement, you are required to do the fitting before understanding or reflecting on your client's performance in noisy environments. ACT is not a validation measure, so if the wish is to measure speech-in-noise abilities unaided versus aided, as an example, then traditional speech-in-noise tests are appropriate.
How loud is the ACT test?	The ACT test is automatically adjusted based on pure-tone audiometry results. This means the ACT stimulus is clearly audible for all clients. For a person with normal audiometric hearing thresholds, the ACT stimulus is presented at 63 dB SPL, aligned with conversational speech. For clients with hearing loss, audibility is considered for each ear and each 1/3-octave band in the stimulus frequency range, with the stimulus shaped such that there is at least 15 dB of audibility in all 1/3-octave bands.

Question	Answer
How can I recognise a false positive or false negative?	Just as in pure-tone audiometry, some ACT runs may indicate inconsistent responses by the client. False positives (for instance, the client pressing the button too often) are automatically registered by the software and shown in the top right-hand bar of the ACT screen. False negatives (for instance, if the client does not respond to an ACT stimulus that they previously responded to, at the contrast level being tested) can be addressed by the HCP by altering the testing method. In the case of inconsistent runs, it can be helpful to deviate from the Hughson-Westlake (2 down, 1 up) procedure. Please refer to the Interacoustics ACT Quick Guide for examples and potentially helpful deviations.
How can I interpret my client's ACT value?	ACT values are determined by level of severity. A normal ACT value lies between –4 and +4 dB nCL. Lower ACT values mean that the client can hear the contrast at near normal levels, while higher ACT values mean that the client can only hear the contrast at much stronger contrast levels than normal. This means that the higher the ACT value, the more speech-in-noise help the client will need. For those with a moderate or severe ACT value, assistive devices and communication training can be considered. The table below shows the ACT value severity level categories.

ACT value (dB nCL) **-4 to <4**	ACT value (dB nCL) **4 to <7**	ACT value (dB nCL) **7 to <10**	ACT value (dB nCL) **10 to 16**
Severity Level **Normal**	Severity Level **Mild**	Severity Level **Moderate**	Severity Level **Severe**

What does nCL stand for?	The ACT value is denoted as dB nCL which stands for 'normalised Contrast Level' and indicates a client's threshold for detecting speech-like modulations in noise, compared with normal hearing persons. In brief, the background definition of nCL stands for: • n (normalised): the scale is normalised based on normative data acquired from young individuals with hearing thresholds within normal limits • C (contrast): clients are detecting a contrast in the modulation of a signal • L (level): this is a dB measure and is denoted as such

Question	Answer
Can I use the ACT value to help prescribe the level of technology?	Yes. The ACT value serves as a pre-fitting consideration that can help you choose the appropriate hearing aid for your client. The combination of your client's ACT value, pure-tone audiogram and, to a lesser extent, age, is clinically meaningful for predicting a client's speech-in-noise ability precisely. The ACT value is therefore one of many factors than an HCP should consider when choosing a hearing aid. Knowing the client's ACT value can also help build your confidence in knowing when assistive listening devices and counselling tools can be a valuable addition to a hearing solution.
Which hearing aids have automatic integration for the ACT value?	Hearing aids on the Polaris R platform (Oticon Real and onwards) can use an ACT based prescription of help-in-noise which is automatically integrated into Oticon Genie 2.
How do I access the ACT value in the fitting?	In Oticon hearing aids on the Polaris R platform and onwards, the integration of the evidence-based ACT prescription into Genie 2 will allow an automatic, personalised first fit that provides contrast between speech and noise. You will have the option of choosing ACT-based personalization during the fitting and the ACT value will be visible in the personalisation screen in Genie 2. If an ACT value is available in the user database, it will be read out directly by Genie 2. You also have the option to manually enter an ACT value, and the prescribed help-in-noise settings will be automatically applied to the hearing aid fitting. If an ACT-based fitting is chosen, the first-fit settings in the MoreSound Intelligence (MSI) screen in Genie 2 will be adjusted to reflect the objectively predicted speech-in-noise difficulties of the user, while remaining adjustable for fine-tuning if needed.

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