QUESTION

Should auditory or vestibular assessment vs. no auditory or vestibular assessment be used for all people with Friedreich ataxia?	
POPULATION:	all people with Friedreich ataxia
INTERVENTION:	auditory or vestibular assessment
COMPARISON:	no auditory or vestibular assessment
MAIN OUTCOMES:	Sound detection ability; Cochlear outer hair cell function; Auditory neural conduction; Speech perception in noise; Vestibular function;

ASSESSMENT

Problem

Is the problem a priority?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ○ Probably yes ● Yes ○ Varies ○ Don't know	**Auditory Assessment** A review of clinical features in FRDA (beyond afferent ataxia) revealed that 11% of 650 affected individuals reported significant 'hearing loss', .i.e. impaired sound detection (Reetz et al, 2018). Furthermore, the majority of reported cases (observational studies) have shown abnormal auditory neural function and disrupted perception of complex acoustic signals (such as speech) (Rance et al, 2008; 2010a; 2010b; 2012). The degree of hearing deficits correlates with overall disease progress (Rance et al, 2012; Rance and Starr, 2015). There is limited (observational study) evidence of functional hearing deficits severe enough to affect communication ability in everyday listening circumstances (Rance et al, 2010b). **Vestibular and Balance** Studies of the vestibular system function in FRDA individuals revealed abnormalities in the majority of these patients, with a consistent, severe, bilateral vestibulopathy indicating reduced vestibular function. Oculomotor abnormalities are common in FRDA and well documented using caloric, rotatory and head impulse tests (Ell et al, 1984; Fahey et al, 2008; Maudoux et al, 2020; Monday et al, 1978;1984). The presence of abnormal eye movement at early onset of FRDA is a sign of disease severity (Fahey et al, 2008).	The Friedreich's ataxia Clinical Management Guideline Patient and Parent Advisory Panel were interviewed on the consequences, urgency and priority of the topic. 2/7 indicated disturbance of audiological function was probably serious, 5/7 indicated serious. 1/7 indicated disturbance of audiological function was probably not urgent, 2/7 indicated probably urgent, 4/7 indicated urgent. 1/7 indicated disturbance of audiological function was probably not a priority, 2/7 indicated probably a priority, 4/7 indicated priority. (Aug 2020).

Desirable Effects

How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

○ Trivial ○ Small ● Moderate ○ Large ○ Varies ○ Don't know	A search of four databases (CENTRAL, MEDLINE, EMBASE, CINAHL) identified no randomized, non-randomized controlled, cohort and case studies published from 2014 through to 11 September 2020. No further published evidence meeting the search criteria was identified in the Consensus Clinical Management Guidelines for Friedreich's ataxia, 2014.	Awareness of hearing deficit in individuals with FRDA, their carers, clinicians and others can improve communication through implementation of hearing tactics including: • Acoustic optimisation (reduction of background noise) • Communication strategies Identification/quantification of deficits can underpin intervention. FRDA is characterized by severe and widespread anomalies in the oculomotor and vestibular systems. When combined with ataxia, these anomalies can further impair the autonomy of the patients. Adding vestibular explorations to the evaluation of ataxic patients could help clinicians in the differential diagnosis of progressive ataxia syndromes.

Undesirable Effects

How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Large ○ Moderate ○ Small ● Trivial ○ Varies ○ Don't know	A search of four databases (CENTRAL, MEDLINE, EMBASE, CINAHL) identified no randomized, non-randomized controlled, cohort and case studies published from 2014 through to 11 September 2020. No further published evidence meeting the search criteria was identified in the Consensus Clinical Management Guidelines for Friedreich's ataxia, 2014.	Auditory and vestibular assessments are non-invasive and very unlikely to have undesirable effects.

Certainty of evidence

What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

○ Very low ● Low ○ Moderate ○ High ○ No included studies	No published evidence.	

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
● Important uncertainty or variability ○ Possibly important uncertainty or variability ○ Probably no important uncertainty or variability ○ No important uncertainty or variability		

Outcomes	Importance	Certainty of the evidence (GRADE)
Sound detection ability - not measured	CRITICAL[a]	-
Cochlear outer hair cell function - not measured	IMPORTANT[b]	-
Auditory neural conduction - not measured	IMPORTANT[c]	-
Speech perception in noise - not measured	CRITICAL[d]	-
Vestibular function - not measured	IMPORTANT[e]	-

a. Identified as critical (2/6), important (2/6), low importance (2/6) by people with FA and critical by expert authors on this topic.
b. Identified as critical (2/6), low importance (2/6) and requiring more information about the outcome (2/6) by people with FA and critical by expert authors on this topic.
c. Identified as critical (1/6), important (2/6), low importance (2/6) and requiring more information about the outcome (1/6) by people with FA and critical by expert authors on this topic.
d. Identified as critical (5/6) and low importance (1/6) by people with FA and critical by expert authors on this topic.
e. Identified as critical (2/6), important (3/6) and low importance (1/6) by people with FA and critical by expert authors on this topic

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ○ Probably favors the intervention ● Favors the intervention ○ Varies ○ Don't know	No published evidence.	

Acceptability

Is the intervention acceptable to key stakeholders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know	No published evidence.	The Friedreich's ataxia Clinical Management Guideline Patient and Parent Advisory Panel were asked if the intervention was acceptable (weighing up the balance between benefits, harms and costs). 2/5 indicated auditory and vestibular assessments were probably reasonable, 2/5 indicated reasonable, 1/5 indicated didn't know if reasonable. (Aug 2020).

SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	**Yes**		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	**Moderate**	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	**Trivial**		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	**Low**	Moderate	High			No included studies
VALUES	**Important uncertainty or variability**	Possibly important uncertainty or variability	Probably no important uncertainty or variability	No important uncertainty or variability			

	JUDGEMENT						
BALANCE OF EFFECTS	Favors the comparison	Probably favors the comparison	Does not favor either the intervention or the comparison	Probably favors the intervention	**Favors the intervention**	Varies	Don't know
ACCEPTABILITY	No	Probably no	**Probably yes**	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention	Conditional recommendation against the intervention	Conditional recommendation for either the intervention or the comparison	Conditional recommendation for the intervention	**Strong recommendation for the intervention**
○	○	○	○	●

CONCLUSIONS

Recommendation

We recommend that all individuals with Friedreich ataxia undergo auditory and vestibular assessment over not having these assessments.

Justification

Audiological function was identified by the Patient & Parent Advisory Panel as a priority. Although there is no published evidence in FRDA, in other populations undiagnosed hearing deficit has been shown to exacerbate communication difficulties, resulting in increased social isolation and reduced quality of life.

As with the auditory brainstem responses, vestibulo-ocular responses and gaze stability control are correlated to the disease severity and disease progression and could be used as markers of severity and progression. Therefore, testing these functions should be considered as additional tools for monitoring the evolution of the disease.

All individuals with FRDA should benefit from a vestibular and auditory assessment including at least v-HIT, EVAR, c-VEMPS, pure tone audiometry, DPOAEs, ABR and a speech discrimination test.

Subgroup considerations

This recommendation is for all individuals with Friedreich ataxia. Developmental issues in pediatric populations should be considered: hearing impairment in children can affect speech, language, social and academic development.

Research priorities

N/A

References

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