

Medical Expertise in ADHD

The reality
Dr. Linette Gomes.

Stimulant medication

- “Cosmetic psychopharmacology where the fine line between treating a disorder and enhancing a particular aspect of one’s personality is often crossed”.

Trends in prescribing practices

- Marked increase in prescription of psychotropic medication, especially stimulants in Australia, the U.S.A, Canada, and the U.K.
- 1998 NIH Consensus Development Conference highlighted concerns about overuse of stimulants.
- However other studies assessing use of stimulants in school-children have found a relative underuse of stimulants relative to the prevalence of diagnosis. (Goldman et al (1998); Szatmari et al (1989); Wolraich et al (1996) and Jensen et al (1999).

Questions

- What constitutes best practice in ADHD? What are our ‘gold standards’ for practice?
- What do we actually know about how doctors diagnose and manage ADHD?
- What is their level of expertise?
- What is medical expertise?

Guidelines for Best Practice

- National Health and Medical Research Council (NHMRC) recommendations (1996).
- American Academy of Child & Adolescent Psychiatry (AACAP) - Practice Parameters (1997 and 2002).
- American Academy of Pediatrics (AAP) recommendations (2000).
- The National Institute for Clinical Excellence (NICE) guidance (2000).
- The National Institute of Health (NIH), Bethesda, consensus statement (2000)
- The Texas Children’s Medication Algorithm Project: parts 1 and 11 (Pliszka et al., 2000).
- The European Network for Hyperkinetic Disorder (EUNETHYDIS) - clinical guidelines (Taylor et al.,1998, updated 2004)
- Global Consensus on ADHD - global ADHD working group (Remschmidt, 2004)

What do we know about actual practice

- Zarin, Tanelian, Suarez and Marcus (1998)
- Zarin, Suarez, Pincus, Kupersanin and Zito (1998) and Epstein, Shaywitz, Shaywitz and Woolston, (1991)
- Sandoval, Lambert and Yandell (1976)
- Bennett and Sherman 1983
- Copeland, Wolraich, Lindgren, Milich, and Woolson, (1987)
- Wolraich, Lindgren, Stromquist, Milich, Davis, and Watson, (1990)
- Stancin, Christopher and Coury (1990)
- Kwasman, Tinsley, and Lepper, (1995)

Actual Practice (cont)

- Kwasman, Tinsley and Lepper surveyed 380 paediatricians and assessed a greater range of paediatricians' knowledge, attitudes and practices re ADHD. Also examined doctors' perceptions of their patients' understanding of ADHD
- Rushton, Fant and Clark (2004) examined adherence to AAP practice guidelines.
- Hoagwood, Kelleher, Fell and Comer (2000) reviewed literature and analysed 2 national surveys of physician practices
- Phelps (1992) unpublished study (Australian experience)
- Hazell, McDowell and Walton (1996)

Medical Expertise

- What are the characteristics of medical expertise?
- What role does EBM play in clinical expertise?
- What characterizes doctors who practice more in accordance with guidelines?
- Is there a spectrum of medical expertise?
- How does expertise vary according to specialty, type of training, years in training, experience?
- Does expertise matter? Does it influence patient outcome?

Characteristics of Expertise

- Experts have large domain-specific knowledge bases
- Experts' knowledge base is well structured. They are capable of instant pattern recognition.
- Experts can see problems and represent at a deeper principle-based level.
 - Scheme-inductive diagnostic problem solving
 - Expert schemes are defined into chunks of knowledge and displayed as inductive trees or maps recreating the knowledge of experts. Examples are the algorithms commonly taught to med students and the protocols currently enjoying popularity through NSW dept of health.

Characteristics of Expertise (cont)

- Illness scripts and forward or backward reasoning.
- Deliberate effortful practice (experience).
 - 10-years to achieve superiority in performance
 - needs effortful deliberate practice with focus and feedback.
 - Superiority of clinical experts is probably due to a well-structured knowledge base rather than an innate superior perceptual ability
- Superior short and long-term memory
- Better self-monitoring and self-knowledge skills
- Communicative ability, respect, empathy, trust, professionalism

Expertise

- Knowledge - well organised and structured
- Experience - deliberate, effortful and focussed practice
- Diagnostic Accuracy - matching knowledge and experience with a current new situation
- Self-monitoring skills
- Combination of above should enable the expert to
 - be familiar with the latest EBM - guidelines and recommendations.
 - Recognise patient symptomatology and activate appropriate illness scripts - be more accurate diagnostically
 - take into account the patient's current clinical state and circumstances

Aims

- Assess the expertise of doctors in Australia in assessment and management of ADHD by:
 - assessing knowledge.
 - assessing experience.
 - assessing diagnostic accuracy.
 - assessing metacognitive (self-evaluation) skills.
 - assessing actual adherence to recommended guidelines.
- Is there a spectrum of expertise?
- Does expertise matter?
 - Do experts practice more in accordance to established guidelines?
 - Is patient outcome related to expertise?

Method

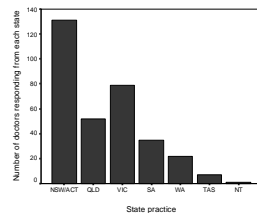
- Study conducted in 2 phases
- Phase 1: survey questionnaire of a saturation sample of Australian paediatricians & psychiatrists.
 - Demographics, current experience (numbers & proportion of ADHD),
 - Knowledge (35 questions)
 - Diagnostic accuracy (vignettes - assessing score deviations from answers given by a panel of local experts)
 - Self-evaluation - ADHD and differentials and beh Mx tools
 - Adherence to recommended guidelines

Method (cont)

- Phase 2: survey questionnaire of parents of a randomly selected group of patients for whom stimulants had been prescribed by the NSW doctor respondents from phase 1. Up to 10 patients/doctor.
 - Modification of Child Health Questionnaire (Landgraf, Abetz & Ware 1999).
 - 37 outcome items
 - the child's health, behaviour, mood, development, peer relationship and self-esteem issues.
 - Changes in outcomes in the 6 months post assessment by their specialist doctor.
 - 20 satisfaction items relating to satisfaction of
 - the parent with various child outcomes,
 - satisfaction with the doctor
 - satisfaction of the child

Results - Response rate

- 804 Paediatricians and Child Psychiatrists RACP, ACP & RANZCP.
- 352 of 804 (44%) were from NSW.
- 2 mail-outs.
- Overall response rate was 328 (41%)
- NSW response rate was 130 of 352 (37%)
- Response rate for non-NSW states was 198 of 452 (44%).



Results - Response rate (N=326)

- Mean Age = 48 years
- Gender: 71% males
- Specialty
 - General Paediatricians - 49%
 - Child Psychiatrists - 21%
 - Community/Developmental Paediatricians - 13%
 - Other - 17%
- Type of Practice
 - Private Practice only - 21%
 - Private & Hospital Practice - 39%
 - Hospital on-site practice - 15%
 - Community Centres - 11%
 - University academics - 4%
 - other - 10%
- Geographical Area
 - Capital Cities - 68%
 - Provincial cities - 22%
 - Isolated Paediatricians - 9%

Summary of results and conclusions

- Experience
 - Length of time in practice or training was not associated with greater expertise.
 - absolute numbers or proportion of new ADHD relative to other Dx seen in the previous 12 months were the most important markers for expertise.
 - wide variation in current and past experience (0-450 /year; 0-95%)
 - Small number of doctors (9 in Phase1; 4 in phase2) saw >200 ADHD patients / year
 - **Experience (numbers of ADHD patients) was significantly correlated with performance in the factual knowledge test.**
 - Medium to strong correlations between doctors seeing more ADHD patients and those with other related behavioural and developmental disorders suggesting that these doctors probably had a special interest in the beh and developmental disorders.
 - Experience was also weakly correlated with diagnostic judgements measured by performance in the vignettes, suggesting that those doctors seeing greater numbers of patients came closer to the expert panel in their judgements.

Summary of results and conclusions

- Factual Knowledge (performance on knowledge test)
 - reflected extent to which the practical use of knowledge was used.
 - Mean scores for knowledge of effects and side-effects of stimulant medications > knowledge of psychotropic medications (paediatricians).
 - Significant differences in knowledge of stimulant medications between doctors with > and < 20 years of consultant experience.
 - > 20 years saw fewer patients with ADHD and achieved lower scores on stimulant medication questions.
 - General and developmental / community had higher stim med knowledge scores than other groups. Saw greater numbers of new ADHD patients of other groups
 - Types of practice, and states had no significant differences in knowledge scores.
 - Doctors graduating between 1971-1980 performed best in the knowledge test.
 - Knowledge of diagnostic systems.
 - Knowledge of differences between the 2 diagnostic systems DSM-IV and ICD-10 was least well answered question.

Summary of results and conclusions

- **Diagnostic Accuracy**
 - accuracy of diagnostic judgements measured by recording score deviations from answers determined by the 'expert panel's' consensus view.
 - Measure of the outcomes not process of cognitive reasoning skills
 - Normal distribution of score deviations which varied from low to high.
 - Overall doctors with more current experience (seeing more ADHD patients) came closer to the diagnostic judgements of the expert panel. However correlations were weak.

Summary of results and conclusions

- **Self-evaluation (SE)(Metacognitive) skills.**
 - 6 items on Mx of : SLD, Dev Disorders, Emotional / Behav, Psych Disorders, family Dysfunction, and knowledge of literature on ADHD.
 - 7 items on use of Mx strategies: stimulant medication, star charts, time-out, reward programs, anger mx and family counselling.
 - SE scores reflected the training and type of specialty.
 - Dev/beh paediatricians rated themselves more highly in Developmental disorders and Child Psychiatrists in emotional/Behavioural disorders and family dysfunction
 - SE scores in competence using stimulant medication were similar for all doctors.
 - Community and dev paed more confident with 'star charts' and 'time-out'; Child psychiatrists with anger management, family counselling

Summary of results and conclusions

- **Self-evaluation (SE)(Metacognitive) skills (Cont)**
 - More experienced doctors (those seeing greater numbers and greater proportion of ADHD patients) were significantly more self-confident in their knowledge of the literature and ability to assess specific clinical problems, as well as in the use of stimulant medication, and other behaviour mx strategies compared to doctors seeing fewer patients.
- **SE of knowledge of literature and actual performance in knowledge test - moderately strongly correlated**
 - Also moderately strong correlation between SE of knowledge of stimulant medications and actual scores on questions relating to use of stimulant medication in the knowledge test - good metacognitive skills.
 - Multiple linear regression analysis showed that while SE of knowledge of the literature was most predictive of actual knowledge scores, experience (proportion of new ADHD patients) added to the predictive value.

Management Practices

Adherence to guidelines (assessment practices)

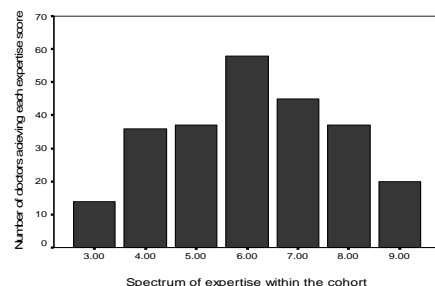
- Frequency of use of assessment and management tools rated on a Likert scale of 0 (never) to 10 (always). Responses grouped into 0-3 (never or seldom), 4-7 (sometimes used) and 8-10 (often or always used).
- Schoolteacher & schoolcounsellor reports often or always used by 88% and 70% doctors respectively.
- Parent & teacher rating scales and psychometric tools often or always used by 60%.
- Brain imaging, EEGs and vigilance tests (eg TOVA) seldom or never used by 85-92% of doctors.
- Clinical response to medication always or often used by 43% and sometimes used by 31.6% as assessment tool.

Management Practices

Adherence to guidelines (Management practices)

- Stimulant medication & behaviour management were often or always used by 74 - 80%.
- Family counseling & support often or always used by 63%.
- Remedial teaching often or always used by 44% and sometimes used by 41%.
- Dietary manipulation, developmental optometrists, tuna oil and acupuncture were never or seldom used by 89 - 100% of the doctors.
- 61% of 328 respondents used stimulant medication together with behaviour management, only a small number reported use after an initial trial of behaviour management alone.
- Monitoring use of stimulant medication was mainly by parent, teacher and child report, with 'behaviour during consultation' teacher & parent rating scales and drug holidays used in 50%.
- Placebo trials not important.
- 60% doctors initiated behaviour management themselves; 40% referred for initial & ongoing management.

Spectrum of Expertise showing the doctors graded relative to each other



Relationship of expertise to assessment & management practices

- Expertise scores were grouped into low, medium and high expertise and examined for associations with recommended practices in ADHD.
- Use of teacher and parent rating scales in assessment, and family counselling and support was significantly greater by those higher on the expertise spectrum.
- Use of brain imaging (CT or MRI) used significantly less by high-expertise compared to low-expertise group.
- Use of stimulant medication was significantly higher in the high expertise group.
- Overall the high expertise group practised closer to recommended guidelines.

Phase two - Patient outcomes and satisfaction Does Expertise matter?

- 72 of 130 NSW respondents from phase one were participants - patients on stimulant drug register of Pharmaceutical Branch of NSW dept of Health.
- 72 doctors - up to 10 patients randomly selected.
- Total of 504 patients treated by 72 doctors surveyed with phase two survey instrument.
- 152 (30%) of 504 responded - belonged to 45 doctors.
- 133 of 152 were analysable data sets.
- 80% of children were males.
- Mean age - 10 years 1 month
- school aged between 1st to 5th grade.

Phase two doctors

- Doctors in phase two had similar demographics to phase 1 doctors. More general paediatricians (67% from 49%) and fewer child psychiatrists (11% from 21%) participated in phase 2.
- Phase 1 and 2 doctors were similar in performance in knowledge test. Phase 2 doctors were more experienced (greater numbers of new ADHD), and had lower score deviations in vignette 2.
- Patients outcomes and satisfaction were examined in relation to doctors' expertise variables.
- Possible confounding factors contributing to patient complexity (co-morbid disorders and numbers of previous doctors seen) and compliance were examined in relation to doctors' expertise variables as well as patient outcomes and satisfaction and found to be non-contributory.

Patient outcomes and satisfaction - does medical expertise matter?

- There was no association between any of the doctors' 'expertise' variables and patient outcomes.
- More experienced (Proportion of ADHD patients) doctors had better reports of child mood outcomes.
- Higher knowledge scores were positively correlated with satisfaction with the specialist.
- Expertise spectrum - no significant relationship between doctors at either end of the expertise spectrum and outcomes or satisfaction.

Patient outcomes and satisfaction - does medical expertise matter?

- Doctors who initiated behaviour management by themselves had significantly better 'mood outcomes' and 'effect of the child's behaviour on the family' compared to those who referred on.
- These doctors were also significantly more experienced (seeing more behavioural disorders, family dysfunction and proportion of new ADHD), more self-confident in ability to manage emotional/behavioural disorders, family dysfunction and psychiatric disorders and in the use of tools of behaviour management (star charts, time-out, reward programs, response cost, anger Mx and family counselling). They had higher knowledge scores.

Summary

- A spectrum of expertise in ADHD exists.
- Those higher on the spectrum practice more closely to recommended guidelines.
- Overall use of assessment and management tools and self-confidence in their use tends to reflect area of specialty as well as current experience.
- Experience (numbers of patients) and knowledge are important parameters of medical expertise - suggest that deliberate, focussed and effortful practice improves performance.
- In this study, expertise did NOT influence patient outcome - possibly a reflection of the hierarchical Vs linear ordering of expertise in our sample.

Methods

- Phase one: Saturation sample of Australian Paediatricians and Psychiatrists were surveyed by questionnaire
 - purpose designed instrument
 - focus on assessment of experience, knowledge, diagnostic accuracy, metacognitive skills and management practices
 - 10 drafts - Piloted - 20 local and interstate doctors
 - Sample of doctors taken from college mailing lists (RACP, RANZCP)
 - data analysed on SPSS

Methods (Development of Survey Instrument)

- Section A : Demographics and Training
 - 11 items - demographics including type of practice, geographic location.
 - level and type of training experience, type of specialty including general paediatrics or subspecialty eg developmental paediatrics or psychiatry.
 - Current experience including absolute numbers and proportion of ADHD patients relative to other Dx in a 12 month period.
- Section B: Knowledge of ADHD
 - factual background knowledge of published literature on ADHD.
 - 35 separate questions grouped into 10 items
 - multiple choice or true/false format.
 - Score for overall general knowledge and subscore for knowledge of stimulant medications
- Section C: Self-evaluation
 - abilities in Dx and Mx of ADHD
 - self-evaluation of knowledge of literature cf actual performance in the knowledge test

Methods (Development of Survey Instrument)

- Section D: Diagnostic Judgements - aiming to assess diagnostic accuracy
 - expert panel of 6 local experts : consensus from 'round the table' discussion
 - 3 vignettes (case scenarios) of ADHD and co-morbid disorders (LD, CD).
 - Vignettes 1 and 2 were clinical scenarios of ADHD +/- comorbid disorders. 4 diagnostic probabilities were offered for each. Respondents asked to give rating from 1 - 10 of diagnostic probability for each.
 - Results compared to the 'answers' given by our expert panel consensus.
 - Score deviations - amount by which respondents answers deviated from the expert panel answers - were calculated. The greater score deviations indicated greater differences from expert consensus opinion.
- Section E: Actual Practice / Compliance with guidelines
 - Vignette 3 was a typical case scenario of a child fulfilling diagnostic criteria for ADHD via DSM-IV.
 - Questions related to respondents' practical knowledge of diagnostic criteria
 - Clinical framework from which a series of questions on use of diagnostic and management tools would objectively elicit information on adherence to NHMRC guidelines

Methods (cont)

- Phase two: Aimed to assess outcomes and satisfaction in relations to constructs of medical expertise. Effects of patient complexity and adherence to treatment were considered
- A randomly selected sample of patients/parents who had been treated with stimulant medication by the NSW respondent doctors from Phase one was chosen.
 - Surveyed via their treating doctors
 - patients only identified by code number linking them to their doctor.
 - Data merged for the 45 Phase 2 participating NSW doctors and their patient responses were averaged.
- The questionnaire was based on the Child Health Questionnaire (Landgraf, Abetz & Ware 1999), modified and piloted amongst 20 parents from local ADHD clinics

Methods - Phase Two patient questionnaire

- Seven Adapted Outcome measures:
 - General Health and Behaviour
 - The child's behaviour
 - Child's moods
 - "your child's behaviour and moods effect"
 - "your child's satisfaction with"
 - Your own emotional worry or concern over"
 - "your child's behaviour has affected your family in"
- 20 satisfaction items divided into 3 areas
 - parental satisfaction
 - satisfaction with the doctor
 - satisfaction of the child