
CLINICAL PRACTICE GUIDELINES
•
LIGNES DIRECTRICES DE PRATIQUE CLINIQUE

Report of the Canadian Hypertension Society Consensus Conference: 1. Introduction

S. George Carruthers,*¶ MD, FRCPC; Pierre Larochelle,†¶ MD, PhD, FRCPC;
R. Brian Haynes,‡ MD, PhD, FRCPC; Andrés Petrasovits,§ PhD, MPH;
Ernesto L. Schiffrin,†¶ MD, PhD, FRCPC

Résumé : Depuis la première conférence consensuelle de la Société canadienne d'hypertension artérielle (SCHA) de 1982, les résultats de nombreux essais cliniques contrôlés ont été publiés. La disponibilité de ces résultats a été responsable d'une réévaluation des recommandations des conférences consensuelles antérieures. Dans cet article, les auteurs décrivent les préparatifs de la conférence consensuelle de 1992 et les mécanismes par lesquels les recommandations antérieures ont été examinées et remaniées en fonction des nouvelles données. Les sujets abordés étaient le diagnostic de l'hypertension artérielle légère, le traitement pharmacologique de l'hypertension artérielle, l'hypertension artérielle chez les gens âgés, et l'hypertension artérielle et le diabète. De plus, les auteurs décrivent brièvement les recommandations publiées dans le cinquième rapport du Comité conjoint national sur le dépistage, l'évaluation et le traitement de l'hypertension artérielle. Des points de convergence substantiels sont notés entre ces recommandations et celles qui sont issues de la conférence consensuelle de la SCHA de 1992.

hypertension¹ many impressive controlled trials have been carried out, and our knowledge of hypertension has been advanced considerably. This report of the 1992 consensus conference of the CHS, held in Montreal, updates the report on the diagnosis of mild hypertension as well as the subsequent reports on the pharmacologic treatment of hypertension,² hypertension in elderly patients³ and diabetes and hypertension.⁴ The report on nonpharmacologic treatment of hypertension⁵ was not reviewed, because it was agreed that there have been no major advances in the area since the last consensus conference on the topic in 1989.

Preparation for the 1992 consensus conference began with the striking of four panels (Appendix 1), each charged with the review and revision of existing guidelines in its area of responsibility according to new evidence. Virtually all the specialists invited were able to participate. Each panel included at least one member who had participated in the earlier consensus conference on the subject.

The panels were charged with doing extensive reviews of the research to determine the current state of evidence concerning the measurement of blood pressure and the diagnosis and treatment of hypertension. The literature review of the levels of blood pressure at which the initiation of antihypertensive therapy does more good than harm for various groups was based on the

In the years since the Canadian Hypertension Society (CHS) reported the results of its 1982 consensus conference on the management of mild

*From the departments of medicine at *Dalhousie University, Halifax, NS, and †the University of Montreal, Montreal, Que.; ‡the Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ont.; and §the Health Promotion Directorate, Department of National Health and Welfare, Ottawa, Ont.*

¶Members of the organizing committee.

The conference was financially supported by educational grants from the Medical Research Council of Canada, the Department of National Health and Welfare and the pharmaceutical companies listed in Appendix 1.

Reprint requests to: Dr. S. George Carruthers, Ste. 442, Bethune Building, Victoria General Hospital, Dalhousie University, Halifax, NS B3H 2Y9

most recent CHS report on pharmacologic treatment, augmented by formal MEDLINE searches. In addition, searches were conducted on the role of echocardiography, self-assessment of blood pressure and ambulatory blood pressure monitoring in diagnosis.

The goal of the search was to find solid evidence from which to derive recommendations that could be implemented by Canadian general and family practitioners — the physicians who detect and manage most cases of hypertension. Journal articles were rated according to the methodologic strength of the studies they described (Tables 1 to 4). This approach was synthesized from a number of sources.⁶⁻⁹

The recommendations were graded according to the level of the evidence supporting them¹⁰ (Table 5). Thus, grade A recommendations are based on very strong evidence and should be given the highest priority by practitioners. For the most part, grade D recommendations concern practical issues of implementation and are based on expert opinion, clinical experience and the common sense of the panelists. Recommendations for further research were made according to each committee's perceptions of the importance to clinical management of a topic and the lack of satisfactory evidence to date; thus they were not graded. Similarly, recommendations that the evidence was insufficient to warrant clinical use of a procedure (such as home blood pressure monitoring) were not graded.

Each panel prepared a series of draft reports that were circulated among panel members and selected organizers. There were frequent communications between the panels' chairpeople and the organizers to establish the level of progress and to discuss issues of potential

overlap between groups. Final draft reports from each group were circulated to all panelists before the Montreal conference.

All the proposed recommendations were carefully discussed during the 2-day conference. Each panel met in committee and in plenary sessions. Observers from the pharmaceutical industry considered the final draft recommendations in each of two independent committees (Appendix 1) and provided comments during the plenary sessions, although they did not vote on the recommendations. The organizers participated in the deliberations of at least two of the panels and also engaged in the discussions of the observers from the pharmaceutical industry. There was ample opportunity for debate between the members of each expert panel and the other panelists and observers during the plenary sessions. Finally, a secret vote on each recommendation was conducted among the entire group of expert panelists.

The recommendations were presented and discussed in two public meetings, first in May 1992 at the International Heart Health Conference, in Victoria, and then in September 1992 at the annual meeting of the Royal College of Physicians and Surgeons of Canada, in Ottawa. Both presentations provided vigorous debate and commentary but no new information.

Particularly important was that none of the grades of recommendations was regarded by the panelists as superseding the need for clinical judgement. Thus, the circumstances of individual patients may take precedence over the recommendations, even those given a grade of A. Furthermore, the recommendations were based on evidence available in the spring of 1992, and new evidence should be considered as it emerges. To facilitate this process the key studies supporting each recommendation

Table 1: Levels of evidence for rating studies of diagnosis

I.
(a) Independent interpretation of test procedure (without knowledge of result of diagnostic standard).
(b) Independent interpretation of diagnostic standard (without knowledge of result of test procedure).
(c) Selection of patients or subjects who are suspected but not known to have the disorder of interest.
(d) Reproducible description of both the test and the diagnostic standard.
(e) At least 50 patients with and 50 without the disorder.
II. Meets four of the criteria in I.
III. Meets three of the criteria in I.
IV. Meets two of the criteria in I.
V. Meets one of the criteria in I.
VI. Meets none of the criteria in I.

Table 2: Levels of evidence for rating studies of prognosis

I.
(a) Inception cohort.
(b) Reproducible inclusion and exclusion criteria.
(c) Follow-up of at least 80% of subjects.
(d) Statistical adjustment for extraneous prognostic factors (confounders).
(e) Reproducible descriptions of outcome measures.
II. Inception cohort but meets only three of the other criteria in I.
III. Inception cohort but meets only two of the other criteria in I.
IV. Inception cohort but meets only one of the other criteria in I.
V. Inception cohort but meets none of the other criteria in I.
VI. Meets none of the criteria in I.

graded A through C are cited with the recommendation.

Recommendations of this type are of value only if they are accepted and applied to the population for whom they were intended. Their publication is the next step in the education of the physicians and other health care professionals who are responsible for detecting and managing hypertension. The 1992 recommendations will be included in this series of articles, which deals with the topics of diagnosis, pharmacotherapy, hypertension in elderly people, and diabetes and hypertension.

Addendum

The fifth report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V) has recently been published¹¹ together with an editorial¹² and an important article on the pri-

mary prevention of hypertension.¹³ We are pleased to note substantial areas of agreement between our recommendations and those of the JNC V.

Both the report of the JNC V and our report on diagnosis deal with issues such as ambulatory blood pressure monitoring and the use of echocardiography for the detection of left ventricular hypertrophy. The US report leans toward a more liberal use of these techniques in the detection and evaluation of hypertension than we felt was appropriate from the available information. It suggests selective use of both techniques, whereas our recommendations are for further evaluation and standardization before their use is formally endorsed.

In the JNC V report there is a shift from the wide range of initial monotherapies approved in the Joint National Committee's fourth report¹⁴ (JNC IV) to a recommendation that diuretics and β -blockers are the drugs of choice, unless these are contraindicated or there are special reasons to give other agents. This conclusion is based on the fact that these are the only classes of drugs that have been shown in long-term controlled clinical trials to reduce rates of illness and death — precisely the rationale of the report of the 1988 Canadian consensus conference on pharmacotherapy² and a guiding principle for the 1992 conference. Thus, the US recommendations on the initial drug treatment of hypertension are now in concert with the Canadian ones.

The reversal of the JNC IV recommendation was not entirely welcomed by the authors of the accompanying editorial,¹² Weber and Laragh, who have interpreted it as being somewhat regressive and "narrowly legalistic" and as placing "too much reliance" on the benefits observed in cardiovascular end points in studies using diuretics and β -blockers. The authors of the report of the 1988 Canadian consensus conference² and those of the report on pharmacologic treatment from the 1992 Canadian consensus conference (the third article in this series) have encountered similar criticisms, often from physicians who find the putative adverse effects of diuretics and β -blockers on lipids and other metabolic factors to be convincing reasons for choosing α -blockers, angiotensin-converting enzyme (ACE) inhibitors or calcium entry blockers as the routine drugs of choice, even though no long-term studies have been done to show that these drugs reduce the rates of cardiovascular illness and death.

There are subtle differences between the therapeutic

Table 3: Levels of evidence for rating studies of treatment, prevention and quality assurance

- | | |
|------|--|
| I. | A randomized controlled trial (RCT) that demonstrates a statistically significant difference in at least one important outcome — e.g., survival or major illness. |
| OR | If the difference is not statistically significant, an RCT of adequate sample size to exclude a 25% difference in relative risk with 80% power, given the observed results. |
| II. | An RCT that does not meet the level I criteria. |
| III. | A nonrandomized trial with contemporaneous controls selected by some systematic method (i.e., not selected by perceived suitability for one of the treatment options for individual patients). |
| OR | Subgroup analysis of a randomized trial. |
| IV. | A before-after study or case series (of at least 10 patients) with historical controls or controls drawn from other studies. |
| V. | Case series (at least 10 patients) without controls. |
| VI. | Case report (fewer than 10 patients). |

Table 4: Levels of evidence for rating review articles

- | | |
|------|---|
| I. | (a) Comprehensive search for evidence.
(b) Avoidance of bias in the selection of articles.
(c) Assessment of the validity of each cited article.
(d) Conclusions supported by the data and analysis presented. |
| II. | Meets only three of the criteria in I. |
| III. | Meets only two of the criteria in I. |
| IV. | Meets only one of the criteria in I. |
| V. | Meets none of the criteria in I. |

Table 5: Grading system for recommendations

- | | |
|----|---|
| A. | The recommendation is based on one or more studies at level I. |
| B. | The best evidence available was at level II. |
| C. | The best evidence available was at level III. |
| D. | The best evidence available was lower than level III and included expert opinion. |

tic algorithm proposed by the JNC V and that of the Canadian consensus conference. Most important, the Canadian report is more explicit in its recommendation of alternative monotherapy when the combination of a low-dose diuretic and a β -blocker is unsuccessful. Weber and Laragh¹² have affirmed our perspective: "At the very least, physicians should be encouraged to substitute differing drug types if their first selections do not work adequately. Sequential monotherapy will increase the number of patients controlled with one drug instead of two or more."

With regard to the management of hypertension in the elderly we largely agree with the JNC V — a matter of little surprise, since both sets of recommendations relied heavily on the same limited database of large-scale trials of antihypertensive drugs in older patients.

In the management of diabetic patients the JNC V is more tolerant than we are of the role of diuretics. It expresses caution about the use of most drugs in diabetic patients and merely warns the reader to recognize that hypokalemia induced by diuretics may reduce glucose tolerance. Our recommendations, on the other hand, conclude that diuretics should be avoided, since there is evidence that death rates may increase in diabetic patients treated with thiazides.

The special report on primary prevention¹³ reiterates much of what was stated in the report of the CHS consensus conference on nonpharmacologic management of hypertension⁵ but from the perspective of prevention rather than treatment. The authors of the special report encourage the concept of lifestyle modification through education; in fact, many of their conclusions are based on extrapolations of the effects of nonpharmacologic therapy in patients with confirmed hypertension rather than on conclusive trials of primary prevention. We agree with Weber and Laragh¹² that it is premature to conclude that this approach will be as effective or as cost-effective as the authors might wish.

In summary, the recommendations of the JNC V and those of the 1992 Canadian consensus conference are much closer than those of the 1988 and 1989 reports.^{2,14} In both Canada and the United States there will be those with a healthy cynicism about diuretics and β -blockers as the first choice in therapy. However, the onus is clearly on the supporters of α -blockers, ACE inhibitors and calcium entry blockers to demonstrate that these medications are at least as successful in reducing rates of illness and death as diuretics and β -blockers.^{15,16} We expect JNC VI and the next Canadian consensus conference on pharmacotherapy to have explicit answers to these concerns.

References

1. Logan AG: Report of the Canadian Hypertension Society's consensus conference on the management of mild hypertension. *Can Med Assoc J* 1984; 131: 1053–1057
2. Myers MG, Carruthers SG, Leenen FHH et al: Recommendations from the Canadian Hypertension Society Consensus Conference on the Pharmacologic Treatment of Hypertension. *Can Med Assoc J* 1989; 140: 1141–1146
3. Larochelle P, Bass MJ, Birkett NJ et al: Recommendations from the Consensus Conference on Hypertension in the Elderly. *Can Med Assoc J* 1986; 135: 741–745
4. Hamet P, Kalant N, Ross SA et al: Recommendations from the Canadian Hypertension Society Consensus Conference on Hypertension and Diabetes. *Can Med Assoc J* 1988; 139: 1059–1062
5. Chockalingam A, Abbott D, Bass M et al: Recommendations of the Canadian Consensus Conference on Non-pharmacological Approaches to the Management of High Blood Pressure, Mar 21–23, 1989, Halifax, Nova Scotia. *Can Med Assoc J* 1990; 142: 1397–1409
6. Department of Clinical Epidemiology and Biostatistics, McMaster University: How to read clinical journals: II. To learn about a diagnostic test. *Can Med Assoc J* 1981; 124: 703–710
7. How to read clinical journals: III. To learn about the clinical course and prognosis of disease. *Ibid*: 869–879
8. How to read clinical journals: V. To distinguish useful from useless or even harmful therapy. *Ibid*: 1156–1162
9. Holbrook A, Langton K, Haynes RB et al: An evidence-based expert system to assist with preoperative assessments. *Proc Annu Symp Comput Appl Med Care* 1991; 15: 669–673
10. Sackett DL: Rules of evidence and clinical recommendations on use of antithrombotic agents. *Chest* 1989; 95 (suppl 2): 2S–4S
11. The fifth report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V). *Arch Intern Med* 1993; 153: 154–183
12. Weber MA, Laragh JH: The Joint National Committee fifth report. Hypertension: steps forward and steps backward [E]. *Ibid*: 149–152
13. National High Blood Pressure Education Working Group report on primary prevention of hypertension. *Ibid*: 186–208
14. The 1988 report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. *Arch Intern Med* 1988; 148: 1023–1038
15. Swales JD: First line treatment in hypertension. Still β blockers and diuretics [E]. *BMJ* 1990; 301: 1172
16. Myers MG: New drugs for hypertension: Should data precede conclusions [E]? *Can Med Assoc J* 1990; 143: 265–267

Panelists

Diagnosis

Drs. C. Edward Evans (McMaster University, Hamilton), R. Brian Haynes (chair; McMaster University), Yves Lacourcière (Laval University, Quebec), Frans H.H. Leenen (University of Ottawa), Alexander G. Logan (University of Toronto), Simon W. Rabkin (University of British Columbia, Vancouver) and Noël Wright (McMaster University)

Pharmacotherapy

Drs. Ellen D. Burgess (University of Calgary), Jean Cusson (University of Montreal), Ross D. Feldman (University of Western Ontario, London), Lawrence A. Leiter (University of Toronto), Martin G. Myers (University of Toronto) and Richard I. Ogilvie (chair; University of Toronto)

Elderly

Drs. J. George Fodor (Memorial University of Newfoundland, St. John's), Cyril I. Gryfe (University of Toronto), Christopher Patterson (McMaster University), Richard A. Reeves (chair; University of Toronto) and J. David Spence (University of Western Ontario)

Diabetes

Drs. Jean-Louis Chiasson (University of Montreal), Keith G. Dawson (University of British Columbia), Pavel Hamet (chair; University of Montreal), John K. McKenzie (University of Manitoba, Winnipeg) and Stuart A. Ross (University of Calgary)

Observers

Committee I — Diagnosis and Pharmacotherapy

Manuel Cardoso (Merck Frosst Canada Inc.), Monique Giguère (Rhône Poulenc Rorer), Wendy Hill (Knoll Pharmaceuticals Canada), Réjean Lemay (Servier Canada Inc.), Pierre Roland (Abbott Laboratories, Limited), Hélène Toupin (Shering Canada Inc.), Guy Tremblay (medical director, Association of Medical Directors of the Life Insurance Industry), Claude Vezeau (G.D. Searle and Co. of Canada, Limited) and Chris Yardley (Sandoz Canada Inc.)

Committee II — Elderly and Diabetes

André Boulet (Nordic Merrell Dow), François Charette (Bristol Myers Squibb), Pierre Dessain (Pfizer Canada Inc.), Gale Larocque (ICI Pharma), Milos Nadasdi (Wyeth Ltd.), Myron Pyzyk (Hoffmann-La Roche Limited), Corey Toal (Miles Canada Inc.), Carley Vint-Reed (Astra Pharma Inc.) and Daniel Yannicelli (Parke-Davis)

Conferences

continued from page 285

Sept. 20–22, 1993: Alzheimer's Disease International
9th Annual Conference — Global Challenge, Local Action
Toronto
Alzheimer Society of Canada, 201–1320 Yonge St., Toronto,
ON M4T 1X2; tel (416) 925-3552, fax (416) 925-1649

Le 24 sept. 1993 : Évaluation de la Qualité et Évaluation
des Technologies — le 3^e colloque régional de l'Office
Canadien de Coordination de l'Évaluation des
Technologies de la Santé
Charlottetown
Coordonnateur des conférences, Office Canadien de
Coordination de l'Évaluation des Technologies de la Santé,
110–955, rue Green Valley, Ottawa, ON K2C 3V4;
tél (613) 226-2553, fax (613) 226-5392

Sept. 24, 1993: Quality Assessment and Technology
Assessment — 3rd Regional Symposium of the Canadian
Coordinating Office for Health Technology Assessment
Charlottetown
Conference coordinator, Canadian Coordinating Office for
Health Technology Assessment, 110–955 Green Valley
Cres., Ottawa, ON K2C 3V4; tel (613) 226-2553,
fax (613) 226-5392

Sept. 27, 1993: Multicultural Health Care — Meeting the
Challenge
Toronto
Gina Borenstein, manager, Public Relations, Scarborough
Grace Hospital, 3030 Birchmount Rd., Scarborough, ON
M1W 3W3; tel (416) 495-2404

Sept. 27–29, 1993: 1st International Conference on
Community Health Nursing Research
Edmonton

Shirley Stinson or Karen Mills, c/o Edmonton Board of
Health, 500–10216–124 St., Edmonton, AB T5N 4A3;
tel (403) 482-1965, fax (403) 482-4194

Oct. 1–3, 1993: International Liver Symposium
Arlington, Va.

Daniel E. Reichard, Office of Continuing Medical Education,
George Washington University Medical Center, 2300
K St. NW, Washington, DC 20037; tel (202) 994-4285,
fax (202) 994-1791

Oct. 1–4, 1993: Women, Sexual Expression and
Psychotherapy
Toronto

Natalie Zlodre, director, Community Resources and
Initiatives, 106–344 Dupont St., Toronto, ON M5R 1V9;
tel (416) 924-8998, fax (416) 924-8352

Oct. 6, 1993: Infertility Treatment and Its Consequences
(sponsored jointly by the Royal Postgraduate Medical
School [RPMS] Institute of Obstetrics and Gynaecology
and the Multiple Births Foundation)
London, England

Symposium Secretary, RPMS Institute of Obstetrics and
Gynaecology, Queen Charlotte's and Chelsea Hospital,
Goldhawk Road, London, England W6 0XG; tel 011-44-
81-740-3904, fax 011-44-81-741-1838

continued on page 302