

PRACTICAL POINTERS
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AUGUST 2007

ESSENTIAL HYPERTENSION An Overview

ISOLATED SYSTOLIC HYPERTENSION IN THE ELDERLY A Major Risk Factor

RISK OF CARDIOVASCULAR EVENTS IN PATIENTS WITH “HIGH NORMAL” BP

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SPORADIC PRIMARY HYPERPARATHYROIDISM A Clinical Update

BARIATRIC SURGERY MAY PROLONG THE LIVES OF THE MORBIDLY OBESE

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This document is divided into two parts

1) The **HIGHLIGHTS AND EDITORIAL COMMENTS SECTION**

HIGHLIGHTS condenses the contents of studies, and allows a quick review of pertinent points of each article.

***EDITORIAL COMMENTS** are the editor's assessments of the clinical practicality of articles based on his long-term review of the current literature and his 20-year publication of *Practical Pointers*.*

2) The main **ABSTRACTS** section is designed as a reference. It presents structured summaries of the contents of articles in much more detail.

I hope you will find *Practical Pointers* interesting and helpful. The complete content of all issues for the past 6 years can be accessed at www.practicalpointers.org

Richard T. James Jr. M.D.

Editor/Publisher.

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HIGHLIGHTS AND EDITORIAL COMMENTS AUGUST 2007

“BP Lowering Is The Key Driver Of Benefit From Therapy”

8-1 ESSENTIAL HYPERTENSION *An Overview*

Essential hypertension can be defined as a rise in blood pressure of unknown cause that increases risk of cerebral, cardiac, and renal events. Essential hypertension usually clusters with other cardiovascular risk factors such as aging, overweight, insulin resistance, diabetes, and dyslipidemia.

Subtle target-organ damage such as left ventricular hypertrophy, microalbuminuria, and cognitive dysfunction takes place early in the course of hypertensive cardiovascular disease. Catastrophic events (stroke, heart attack, renal failure, and dementia) usually happen after long periods of uncontrolled hypertension.

All anti-hypertension drugs (by definition) lower BP. The decline in BP is the best determinant of cardiovascular risk reduction. Most patients need two or more drugs to control BP, and concomitant statin therapy for risk reduction.

Despite the availability of safe and effective anti-hypertension drugs, hypertension remains uncontrolled in most patients.

This article focuses on a few key and emerging issues the authors think are of interest to clinicians.

Topics of interest include:

Ambulatory vs casual BP measurements

White-coat hypertension and masked hypertension

The pro-thrombotic paradox

Pre-hypertension and lifestyle interventions

New-onset diabetes associated with anti-hypertension treatment

First-line antihypertension treatment and concomitant risk factor reduction

Non-adherence to therapy

The “J-curve”

Hypertensive heart disease

Lessons from clinical trials

Read the full abstract !

Primary care clinicians bear the major responsibility of controlling hypertension. It is a prime concern and opportunity for primary care practice and for patients.

I enjoy articles such as this that present clinically relevant information succinctly and with little equivocation.

I believe optimum treatment of hypertension requires continuing determinations of BP at home. This can be done with an inexpensive battery-operated sphygmomanometer. This permits 1) Determination of white coat hypertension, 2) Determination of masked hypertension, and 3) Determination of too-low diastolic pressures, and

4) Allows adjustment of drug dose—adding a 2nd and 3rd drug as needed; and more importantly, reducing dose slowly to lowest possible to maintain target BP.

For disease such as hypertension, which is almost universal over time, lifestyle interventions are applicable to all. Some authorities have proposed universal drug prophylaxis—the “polypill”

“A Major Risk Factor For Cardiovascular And Renal Disease”.

8-2 ISOLATED SYSTOLIC HYPERTENSION IN THE ELDERLY

Before age 50, most persons with hypertension have elevated diastolic pressure. After age 50, systolic continues to rise and diastolic tends to fall. Systolic hypertension predominates. (Isolated systolic hypertension [ISH]; BP > 140 and < 90)

Risk of cardiovascular disease increases progressively as systolic BP rises, approximately doubling with every increase of 20 mm Hg. (Risk also doubles as diastolic rises by 10 mm Hg.) The risk occurs independently of other risk factors.

Most systolic hypertension is caused by reduced elasticity and compliance (stiffening) of the large arteries resulting from age and atherosclerotic changes which stiffen the large arteries.

The Systolic Hypertension in the Elderly Program reported treatment with the generic thiazide chlorthalidone over 5 years reduced cardiovascular events. Treatment of patients with systolic > 160 and diastolic < 90 resulted in reductions in incident coronary heart disease, stroke, and heart failure by 27%, 36%, and 55%. Another trial using the calcium blocker nitrendipine reported similar benefits

The JNC recommends a thiazide-type diuretic as initial therapy for most patients with ISH unless there are compelling indications for use of other drugs. Another drugs(s) can be added if required to achieve target BP goals.

Conclusions and recommendations:

ISH is a major risk factor for cardiovascular and renal disease.

Abundant evidence favors treatment.

Many authorities recommend thiazide diuretics as first-line therapy.

A second and third drug is often required.

Slowly increase doses and slowly add 2nd and 3rd drugs (at monthly intervals) until target BP is reached.

Follow by checking potassium, creatinine, and blood glucose levels.

I enjoy articles of this type which present important applications simply and straight-forwardly, without equivocating.

“Essential” hypertension has been defined as a rise in BP of unknown cause that increases risk for cerebral, cardiac, and renal events. IHS is certainly not essential hypertension. Its pathogenesis is known. Prevention differs (ie, prevention of atherogenesis). Treatment differs in some respects, although many of the therapeutic measures used to treat essential hypertension also lower BP in patients with IHS. I believe there are good reasons to consider IHS as a “secondary” form of hypertension.

The Lower the BP, the Less Likely To Progress To Hypertension, And Develop Cardiovascular Events.

8-3 RISK OF CARDIOVASCULAR EVENTS AMONG WOMEN WITH HIGH NORMAL BLOOD PRESSURE, OR BLOOD PRESSURE PROGRESSION

This prospective study of a large cohort of initially healthy women determined long-term outcomes (related to baseline BP) with regard to: 1) cardiovascular disease, and 2) progression to hypertension. The Women’s Health Study entered over 39 000 female health-care workers beginning in 1993. All were age 45 and older, and were free of cardiovascular disease and other major illnesses.

At baseline, classified subjects into 4 predefined BP categories:

- A. “Optimal” Below 120/75 (n = 12 549; 32%)
- B. “Normal” 120-129/75-84 (n = 11 326; 29%)
- C. “High normal” 130-139/85-90 (n = 4988; 13%) [This was the reference group.]
- D. “Hypertension” 140/90 and above (n = 10 459; 26%)

Followed-up for a median of 10 years. .

Main outcome measures: primary composite endpoint = (cardiovascular death; myocardial infarction; or stroke), or progression to hypertension among the over 28 000 women without hypertension at baseline.

Women with BP 120-129/75-84 had a 39% lower risk of events compared with women with BP 130-139/85-90.

Women with BP under 120/75 had a 49% lower risk of events compared with BP 130-139/85-90.

Women with BP over 140/90 had a much greater risk of stroke than women with BP 130-139/85-90

Women who progressed to BP over 140/90 had a higher event rate during follow-up than women who remained below 140/90.

Women without progression to BP over 140/90 had a 36% lower risk of events than women who progressed to over 140/90.

Women who at baseline had a BP under 120/75 and 120-129/75-84 and progressed to BP over 140/90 had a 30% lower risk of cardiovascular events than women with BP 130-139/85-90 who progressed to over 140/90.

I would treat a patient with a BP of 130-139/85-90 (as the sole risk factor) with advice about lifestyle (with reservations about its effectiveness) and careful follow-up.

What if the patient has “high normal” levels of other risk factors (LDL-cholesterol, triglycerides, fasting glucose, glucose intolerance, low HDL-cholesterol) in addition to the BP? As Americans age, very few, if any, are without some risk factor for cardiovascular disease. If one risk factor is present, it is likely that more are present, or will develop as time goes on. An estimated 90% of Americans will eventually develop hypertension. An estimated 50 million have the metabolic syndrome. Almost all have at least one component of the metabolic syndrome (abdominal obesity, elevated BP, elevated fasting glucose, low HDL-cholesterol, high triglycerides).

I believe it would be reasonable to assume that “high normal” risk factors add up to ever-increasing risk of cardiovascular disease. If lifestyle changes do not alleviate them, would it not be reasonable to treat with low doses of effective, relatively safe drugs? And careful follow-up. Such drug therapy might include drugs selected for this list:

Aspirin

A statin

A thiazide

A beta-blocker

An ACE inhibitor

Metformin.

I believe that lowering all risk factors, including those at the “high normal” range, will lead to benefit. As the article states—there is no threshold below which benefit does not occur.

This approach is a variation of the “polypill” principle in which all persons over age 55 are treated with low doses of a combination of drugs without testing and without follow-up.

(The “polypill was first proposed by Wald and Law in 2003 “A Strategy to Reduce cardiovascular Disease by More than 80%” BMJ June 288, 2003; 326: 1419-23) See Practical Pointers June 2003 [6-1].

“The Secret Of The Care Of The Patient Is In Caring For The Patient”¹

8-4 DIGNITY AND THE ESSENCE OF MEDICINE: The ABC and D of Dignity-Conserving Care.

“To the typical physician, my illness is a routine incident in his rounds, while for me it’s the crisis of my life. I would feel better if I had a doctor who at least perceived this incongruity. I just wish he would give me his whole mind just once, be bonded to me for a brief space, survey my soul as well as my flesh, to get at my illness, for each man is ill in his own way”²

Being a patient refers to an acquired vulnerability and dependency imposed by changing health circumstances. “Relinquishing autonomy is no small matter.” When patients experience a radical unsettling of their conventional sense of self, and a disintegration of personhood, suffering knows few

bounds. To feel sick is one thing, but to feel that who we are is being threatened or undermined—that we are no longer the person we once were—can cause despair affecting body, mind, and soul.

How do healthcare providers influence the experience of patienthood, and what happens when this frame of reference dominates how they view people seeking their care? The answers begin by examining the relationship between patienthood and notions of dignity. “How patients perceive themselves to be seen is a powerful mediator of their dignity.” The more healthcare providers are able to affirm the patients’ values—that is, seeing them as they are, rather than just the illness they have—the more likely patients’ sense of dignity will be upheld.

When personhood is not affirmed, patients are more likely to feel they are not being treated with dignity and respect. Not being treated with dignity and respect can undermine a sense of value and worth. Patients who feel that life no longer has worth, meaning, or purpose are more likely to feel they have become a burden to others, and patients who feel they are little more than a burden may start to question the point of their continued existence.

“Treatment of disease takes its proper place in the larger problem of the care of the patient.”

Kindness, humanity, and respect, the core values of medical professionalism are often overlooked. The author suggests an A,B,C,D of dignity-conserving care: Attitude; Behavior; Compassion; and Dialogue.

Read the full abstract.

- 1 Francis Peabody 1927
- 2 The late Anatole Broyard, essayist and former editor of the New York Times Book Review.

Are Our Very Old Patients Taking Too Many Medications?

8-5 PREVENTIVE HEALTH CARE IN ELDERLY PEOPLE: Needs Rethinking

“It is an art of no little importance to administer medicines properly; but, it is an art of much greater and more difficult acquisition to know when to suspend or altogether omit them.” *Philippe Pinel 1745-1826*

This thoughtful commentary raises an important concern about drug and other therapies in our elderly patients.

Preventive health care aims to delay the onset of illness and disease, and to prevent untimely and premature deaths. How does such health care apply to people who have already exceeded an average lifespan? Could it be that—“Rather than prolonging life, preventive treatments in elderly people simply change the cause of death—the manner of dying”

Our bodies have a finite functional life. Age is a fundamental cause of disease. By using preventive treatments to reduce risk of a particular cause of death in elderly people, are we simply changing the cause of death, rather than prolonging life?

In older patients, the likelihood of many compounding diseases increases, and the absolute risk of dying is higher because they are nearer the end of their life. The effect of a specific treatment may then minimally affect survival. (The effect of statin drugs to prevent cardiovascular disease is an example.)

“By providing treatments designed to prevent particular diseases, we may be selecting for another cause of death unknowingly, and certainly without the patient’s informed consent. This is fundamentally unethical.”

I believe many of our very old patients take too many drugs for too long a time. There comes a time when bother, expense, and risk of adverse drug events outweigh any benefit.

Primary care clinicians should advise their elderly patients about the adverse effects of combinations of multiple drugs many of them are taking for too long. And should be able to inform them about the limited benefits of the drugs in terms of numbers needed to treat.(NNT). Is this benefit really worth it to you? Is lowering the risk of having a heart attack by one in 50 over the next 5 years worth taking this medicine?

I believe the drug therapy (and other therapies) we prescribe to our elderly patients should be aimed primarily at providing comfort, relief of pain, and improvement in quality-of-life, rather than in prolongation of life. There comes a time when the elderly should let go of restrictive medical interventions.

None-the-less, individual patients must decide on their own, based on full information provided by their physician.

“To Help People Live As Well As Possible In The Face Of Advanced Incurable Disease”

8-6 UNDERSTANDING HOSPICE—An Underutilized Option For Life’s Final Chapter

Despite increased use, many aspects of hospice care are still misunderstood by both physicians and patients. Fourteen points for you to become more acquainted with hospice. Read the full abstract.

Did you know?

Fewer than half of hospice patients have terminal cancer. Many have other end-stage illnesses: cardiac disease, dementia, pulmonary disease, stroke, and debility [no one specific terminal diagnosis identified], coexisting conditions, or a particularly rapid functional decline, can outweigh strict adherence to written requirements.

Although at least 6 months of care are provided, the median length of hospice stay is only 26 days.

One third of patients referred to hospice are referred during the last week of life. The most important factors in delayed referrals appear to relate to physician attitudes. Many oncologists and other physicians regard death of a patient as a professional failure.

Under Medicare, many expenses related to the terminal illness are paid in full, including medications and equipment, and visits by hospice nurses and home health aids.

Hospice emphasizes an interdisciplinary approach to care: nurses, social workers, pastoral counselor, bereavement coordinator, and medical director.

Primary care clinicians should be familiar with hospice care in their communities. They should know their limitations and strengths. And maintain active links with hospice staffs. Although all hospices may not provide all services mentioned in the article, they all strive to provide compassionate care.

I have known many family members whose loved ones have benefited from hospice care. I can attest personally to the statement that almost all families receiving hospice care are most grateful for their services. My wife of 48 years died 10 years ago under hospice care. She was able to remain at home, where she wished to die, at my side. My gratitude has not diminished over the years. Hospice people are truly compassionate people.

“Patients Who Awaken With Paresthesias Or Pain In The Median Nerve Distribution Have CTS Until Proven Otherwise.”

8-7 CARPAL TUNNEL SYNDROME: Clinical Review

The American Academy of Neurology (AAN) has proposed guidelines:

Dull, aching discomfort in the hand, forearm or upper arm

Paresthesia in the hand

Weakness or clumsiness of the hand

Provocation of symptoms by sleep

Provocation of symptoms by sustained hand and arm position—by flexion of the wrist to 90 degrees for 60 seconds [Phalen’s sign].

Provocation of paresthesias by tapping over the carpal tunnel [Tinel’s sign].

Provocation of symptoms by repetitive actions of the hand or wrist

Mitigation of symptoms by changing hand position or shaking the wrist

The likelihood of the diagnosis increases with the number of standard symptoms

Nerve conduction studies have been regarded as the diagnostic “gold standard”

Complex investigations are not necessary before starting conservative treatment.

Treatment:

The AAN suggests:

A. Splinting, activity modification, and NSAIDs. Splinting is by a removable wrist brace at a neutral angle, especially at night.

B. Steroids: Oral, or by injection or iontophoresis. Injection has few systemic effects and a low incidence of local complications. The initial response is good (up to 70%). Most relapse. There are anecdotal reports of patients receiving multiple injections over time with benefit.

C. Surgery: For patients failing conservative treatment, decompression is considered the

definitive treatment. It can be done as day-surgery under local anesthesia. It has low risk and usually provides permanent and complete relief.

8-8 WARFARIN VERSUS ASPIRIN FOR STROKE PREVENTION IN AN ELDERLY COMMUNITY POPULATION WITH ATRIAL FIBRILLATION

Twelve percent of people over age 75 have AF; over 50% of people with AF are over age 75. Stroke risk increases with age.

AF is a major risk factor for stroke. Prevention of stroke in the elderly with AF is a major concern.

Anticoagulation with warfarin is highly effective in reducing risk of stroke, but is associated with a higher risk of hemorrhage compared with aspirin, especially in the elderly.

Concerns have been expressed over the applicability of anticoagulation to elderly patients with AF in the primary care setting.

This study concludes that “Age itself should not be regarded as a contraindication to anticoagulation therapy.”

I abstracted this trial in detail because it represents a critical decision for primary care.

I believe the risk of hemorrhage will be higher in elderly patients in primary care practice than in this trial. Patients will be less carefully screened. Many will be at greater risk for hemorrhage than in this trial. The INR will not be as carefully controlled. Patients in primary care who receive anticoagulation for AF will likely receive it for years, much longer than those in the trial. Many elderly patients will not be able to comply with the anticoagulation regimen. The risk of hemorrhage will continue. Anxiety, expense, and bother will continue.

There is a no-win aspect to prevention of stroke with anticoagulation in patients with AF:

There is no way to determine if a stroke is prevented by the anticoagulation.

The patient, the family, and the physician will suffer guilt if the patient has a hemorrhagic stroke, or experiences a life-threatening hemorrhage. This will be blamed on the anticoagulation even if the anticoagulation is not the cause.

Decisions about anticoagulation must be based on the patients consent, on being fully informed, and their ability to conform to strict follow-up.

Many clinicians advise aspirin for elderly patients with a low CHADS score (a lower risk of stroke).

A Clinical Update

8-9 SPORADIC PRIMARY HYPERPARATHYROIDISM

This clinical update includes pathophysiology, symptoms, diagnosis, complications, treatment, and prognosis.

The primary function of the parathyroid glands is to maintain extracellular calcium concentrations within a narrow normal range. Any tendency toward hypocalcemia (as with a calcium-deficient diet) leads to increased parathyroid hormone (PTH) secretion. The homeostatic role of PTH preserves normal serum calcium

concentrations at the cost of bone destruction. High serum calcium concentrations tend to suppress PTH secretion, maintaining the steady calcium-state.

Many cases of primary hyperparathyroidism (**PHPT**) are apparently asymptomatic. But, some investigators feel that truly asymptomatic PHPT is not common. If history-taking is accurate enough, and if mental status is properly assessed, most patients will have some suggestive symptoms. Fatigue and irritability are more common than in the general population.

The biochemical hallmark is hypercalcemia (serum Ca over 10.2 mg/dL). PHPT is the only cause of hypercalcemia associated with high concentrations of serum PTH. In all other conditions associated with high serum calcium serum PTH is low.

Parathyroidectomy is the only curative treatment.

The agreed indications for surgery:

1. Calciuria > 400 mg/24 hours);
2. 30% reduction in creatinine clearance;
3. Osteoporosis (T score < 2.5)
4. Age below 50
5. Serum calcium above 11.2 mg/dL

With the increasing use of parathyroid scintigraphy, surgery has undergone a radical change. This allows preoperative localization of solitary adenomas in 75% of patients. Selective parathyroidectomy lowers risk of postoperative hypocalcemia, reduces operation time, and is associated with excellent success rates.

Most focused parathyroidectomy is done under general anesthesia through a small incision. Patients are discharged the same or the next day.

If you practice long enough, you will unexpectedly encounter a case of PHPT.

Hyperparathyroidism in all its forms is characterized by a re-setting of activity of the parathyroid glands to maintain a calcium level above the normal range. A new balance is reached wherein PTH secretion is increased to maintain the serum calcium at a higher level. The higher level restrains the gland, and maintains its secretion at a higher set level.

See Practical Pointers April 2007 [4-8] "A 64-year-old woman with primary hyperparathyroidism". Mild PHPT had been present for 7 years. No stone, no fracture, no depression or mood swings. BMD was slightly reduced. Urinary calcium was 226 mg/ day. Her serum calcium varied from 10.1 to 11.3. Serum PTH was elevated. Creatinine clearance normal

What to advise? If the tumor is localized and readily accessible by minimally invasive surgery, and if an experienced surgeon is available, the patient may be so informed, and may then choose her course. If she were to ask for advice, I would advise surgery. This would lessen concern about bone and kidney. It would obviate continuing bothersome and expensive observation.

Associated With Long-Term Weight Loss And Decreased Overall Mortality.

8-10 EFFECTS OF BARIATRIC SURGERY ON MORTALITY IN SWEDISH OBESE SUBJECTS

Bariatric surgery is still the only available means of establishing long-term weight reduction in severely obese persons. Whether it has had a long-term effect on mortality is unclear.

This prospective, controlled study involved over 4000 obese subjects. (The majority female; mean age = 46; age range 37 to 60; mean BMI = 42). Patients were recruited from September 1987 to January 2001.

Half underwent bariatric surgery; half (a matched control group) received conventional treatment for weight loss. Three surgical methods were used: adjustable or un-adjustable banding (n = 376); vertical banding (n = 1396); and gastric bypass (n = 265). The control group received the customary non-surgical treatment for obesity at their center of registration. Follow-up = 11 years.

Average weight loss in the control subjects = + or – 2% over 15 years.

Maximum weight loss in the surgery group occurred in the first 2 years: gastric bypass 32%; vertical banding gastropasty 25%; banding 20%. At 10 years, weight loss stabilized at 25%, 16%, and 14%.

Deaths: control group 129 (6.3%); surgery group 101 (5.0%). Hazard ratio = 0.76 (surgery vs control). [NNT to benefit one patient-death by surgery over 10 years = 77.]

Conclusion: Bariatric surgery for severe obesity was associated with long-term weight loss and decreased overall mortality.

I believe that surgical mortality has improved, and the need for re-operation has been reduced over the years as surgical experience and techniques improve.

Timing of bariatric surgery is a challenge to clinical judgment. Under any circumstances, it must first be firmly established that the patient's efforts to lose weight are futile.

Surgery at a younger age would lessen the risk of development of serious complications of obesity. The patient would be in better health, have less risk related to the surgery, and have a longer life-span of increased quality-of-life.

I believe the increase in quality of life may be worth the risks to many patients.

See Practical Pointers May 2007 [5-7] for an article describing what all patients contemplating bariatric surgery should know. This cautions that a thorough medical evaluation (including psychological assessment) is required before surgery. Patients should be informed about realistic outcomes from surgery, and the risks. Perioperative care requires specialized expertise and facilities. Surgery should not be performed if systematic follow-up is not available.

ABSTRACTS AUGUST 2007

“BP Lowering Is The Key Driver Of Benefit From Therapy”

8-1 ESSENTIAL HYPERTENSION *An Overview*

Essential hypertension can be defined as a rise in blood pressure of unknown cause that increases risk of cerebral, cardiac, and renal events. Essential hypertension usually clusters with other cardiovascular risk factors such as aging, overweight, insulin resistance, diabetes, and dyslipidemia.

Subtle target-organ damage such as left ventricular hypertrophy, microalbuminuria, and cognitive dysfunction takes place early in the course of hypertensive cardiovascular disease. Catastrophic events (stroke, heart attack, renal failure, and dementia) usually happen after long periods of uncontrolled hypertension.

All anti-hypertension drugs (by definition) lower BP. The decline in BP is the best determinant of cardiovascular risk reduction. Most patients need two or more drugs to control BP, and concomitant statin therapy for risk reduction.

Despite the availability of safe and effective anti-hypertension drugs, hypertension remains uncontrolled in most patients.

This article focuses on a few key and emerging issues the authors think are of interest to clinicians.

AMBULATORY VS CASUAL BP MEASUREMENTS:

“The measurement of blood pressure is likely the clinical procedure of greatest importance that is performed in the sloppiest manner.”¹

Diagnosis of hypertension should be based on several measurements taken on separate days.²

Aneroid manometers must be serviced and recalibrated periodically.

Home BP measurement: 1) Identifies: “white coat” hypertension; 2) Correlates better with target organ damage than BP measured in the doctor’s office; and 3) Could enhance patients’ adherence to therapy.²

WHITE-COAT HYPERTENSION AND MASKED HYPERTENSION:

Correlation between 24-hour ambulatory BP measurements and office measurement is only moderate.

“White-coat” hypertension is defined as BP elevation in the doctor’s office, but normal BP on ambulatory readings at home. Risk of adverse cardiovascular events is higher in these patients than in normotensive patients, but distinctly lower than in patients with sustained hypertension.

“Masked hypertension” is the opposite—ambulatory BP at home is in the hypertensive range while BP in the office is normal. This occurs more frequently than most clinicians expect it to—up to 1/3 of the hypertensive population in some studies. For many clinicians, masked hypertension has become a blind spot in anti-hypertension treatment. These patients have a higher prevalence of left ventricular hypertrophy and target-organ damage. It carries a more serious prognosis than white coat hypertension. It is undertreated.

THE PRO-THROMBOTIC PARADOX;

Hypertension, a hemodynamic disorder, exposes the arterial tree to increased pulsatile stress. Paradoxically, most major complications of longstanding hypertension are thrombotic, rather than hemorrhagic. (The thrombotic paradox.)

Virchow suggested 3 components facilitating thrombus formation: 1) Damage to the vessel wall, 2) Hyper-coagulability, and 3) Abnormal blood flow. For thrombotic events to take place, all components of the triad must be fulfilled.

Hypertension: 1) Has been associated with endothelial damage or dysfunction [shear stress damages the endothelium, turning it into a pro-thrombotic surface], 2) A hyper-coagulable state in hypertension could be the result of chronic low-grade inflammation. 3) Abnormalities in blood flow have been well recognized in hypertension.

PRE-HYPERTENSION AND LIFESTYLE INTERVENTIONS:

“The issue of pre-hypertension has stirred tempers to an extent that seems more suitable to medieval theologians than to modern scientists.”

Epidemiological evidence suggests a continuous relation between risk of cardiovascular disease and BP beginning at 115/75. Thus, in people without hypertension, (< 140/90), BP levels parallel cardiovascular disease risk in the same way as hypertension.

Normotensive individuals with a host of risk factors could have higher overall risk of cardiovascular disease than mildly hypertensive individuals who are without risk factors. Absolute benefits of anti-hypertension treatment can be greater in these individuals than in those with uncomplicated hypertensive patients.

Lowering BP by lifestyle measures in patients with pre-hypertension would be preferable to drug therapy. But patients' adherence to lifestyle interventions is notoriously poor. Therefore, anti-hypertension drug treatment might have to be considered even in some “normotensive” individuals.

Since benefits of drug treatment in this population are fairly small, such an approach needs documentation of long-term safety. In patients with high-normal BP and diabetes, or history of cerebrovascular or coronary disease, evidence suggests that anti-hypertension drugs are beneficial. (In one study, treatment of pre-hypertension patients with renin-angiotensin blockers delayed the onset of stage 1 hypertension.)

NEW-ONSET DIABETES ASSOCIATED WITH ANTI-HYPERTENSION TREATMENT:

Patients with hypertension are at higher risk of developing new-onset diabetes than normotensive individuals. For over 20 years, it has been noted that diuretics, particularly when combined with a beta-blocker, are associated with increased risk of new-onset diabetes.

The risk of new-onset diabetes associated with beta-blockers, diuretics, or both, seems to be small.³

However, since millions of patients are taking either or both drugs, this translates into thousands of cases of new-onset diabetes every year.

Although many authorities disagree, the authors of this seminar believe that, in uncomplicated hypertension, diuretics and beta-blockers should no longer be considered for first-line therapy. Others state that diuretics—the least expensive and most effective agents—should be the first line treatment for almost everyone with hypertension. Indeed, the authors of this seminar state that “the drug class reported most consistently to reduce morbidity and mortality in hypertension remains thiazide diuretics”.

FIRST-LINE ANTIHYPERTENSION TREATMENT AND CONCOMITANT RISK FACTOR REDUCTION:

The response of BP to different classes of drugs is similar when compared head-to-head in heterogeneous populations.

Individual responses can differ strikingly:

In patients older than age 55, and in blacks at any age, thiazides and calcium blockers will generally cause the greatest reduction in BP. In younger patients, who generally have a more active renin-angiotensin system, BP is lowered more effectively by blockers of the system.

For patients whose BP is already 20 mm Hg or higher than above their goal, a two-drug combination is recommended. Monotherapy is likely to be insufficient.⁴

Patients with high risk should also receive a statin and low-dose aspirin. This strategy would halve deaths in high-risk patients at a cost of less than \$1000 per quality-adjusted life-year gained.

NON-ADHERENCE TO THERAPY:

The issue of non-adherence is an anathema to most doctors. Non-adherence can account for drug treatment failures in nearly half of hypertensive patients. Poor adherence is the most important cause of uncontrolled hypertension. It has been called “America’s other drug problem”.

Many individuals, including the well-educated, may believe that drug treatment can be stopped once the target BP levels have been reached.

The WHO estimates that 50% to 70% of patients do not take their anti-hypertension drugs as prescribed.

THE “J-CURVE”

This is a paradoxical increase in cardiovascular events associated with low diastolic pressure.

The myocardium is perfused during diastole. It is more vulnerable when diastolic pressure is low, especially in the presence of coronary atherosclerosis.

In studies of patients with coronary heart disease and hypertension, the incidence of all cause mortality and myocardial infarction doubled as diastolic pressure fell below 70, and quadrupled as it fell below 60.

The lowest risk of coronary events was observed in one study at a pressure of 119/84. The event rate was steep as diastolic pressure fell, but very shallow for reductions in systolic.

Risk of stroke is not associated with low diastolic.

HYPERTENSIVE HEART DISEASE:

Left ventricular hypertrophy is an independent predictor of an adverse prognosis.

On ECG, the left ventricular strain pattern worsens prognosis and increases risk of heart failure.

Regression of LVH on ECG indicates substantial clinical benefit, and should be an important objective of treatment.

Atrial fibrillation is an under-recognized complication of hypertension. It increases morbidity and mortality.

LESSONS FROM CLINICAL TRIALS:

BP lowering is the key driver of benefit from therapy.

Drugs that deliver less BP control have never produced a superior clinical outcome.

People with treated hypertension remain at higher risk of cardiovascular disease than those without hypertension, attributable in part to the common aggregation of other risk factors.

Patients with hypertension should undergo formal examination of their global risk. The typical hypertensive male over age 55 will have a cardiovascular disease risk of over 20% over 10-years. If his risk is high, he should be treated with statins and low-dose aspirin.

Treatment of hypertension in the pre-hypertension stage might prevent development of severe hypertension and target-organ damage, and diminish risk of dementia.

Lancet August 18, 2007; 370: 591-603 “Seminar”, review article, first author Franz H Messerli, St. Luke’s-Roosevelt Hospital, New York

- 1 My experience with office-consultations with my own physicians: BP is almost always recorded. It is usually taken only once. The nurse then pronounces—“Your blood pressure is. . .”
- 2 I believe home BP measurements are essential for good control. Patients will benefit from purchase of an inexpensive battery-operated sphygmomanometer when hypertension is first suspected. This would allow more accurate determination of the diagnosis. Home BP also permits:
 - 1) Determination of white coat hypertension
 - 2) Determination of masked hypertension
 - 3) Determination of too-low diastolic
 - 4) Allows adjustment of drug dose—adding a 2nd and 3rd drug as needed; and more importantly, reducing dose slowly to lowest possible to maintain target BP.
- 3 I believe this adverse effect can be determined on follow-up, and therapeutic adjustments can then be made if diabetes occurs. I believe the benefit / harm-cost ratio of these two drugs is favorable when used as first-line therapy despite the risk of diabetes.

4 I believe that, when patients begin a second or third drug, the dose of those drugs and the first drug can be reduced and then gradually increased as needed. Using the lowest doses would reduce risk of adverse drug effects. This is especially important in the elderly.

“A Major Risk Factor For Cardiovascular And Renal Disease”.

8-2 ISOLATED SYSTOLIC HYPERTENSION IN THE ELDERLY

The clinical problem:

- In the Framingham study, hypertension (BP 140 and over, or 90 and over, or both) eventually developed in over 90% of participants who had a normal BP at age 50.
- The pattern of BP elevation changes with age. Before age 50, most persons with hypertension have elevated diastolic pressure. After age 50, systolic continues to rise and diastolic tends to fall. Systolic hypertension predominates.¹ (Isolated systolic hypertension [ISH]; BP > 140 and < 90)
- Risk of cardiovascular disease increases progressively as systolic BP rises, approximately doubling with every increase of 20 mm Hg. (Risk also doubles as diastolic rises by 10 mm Hg.) The risk occurs independently of other risk factors.
- Most systolic hypertension is caused by reduced elasticity and compliance (stiffening) of the large arteries resulting from age and atherosclerotic changes which stiffen the large arteries.
- This stiffening causes an increase in the rate of return of reflected arterial pressure waves from the periphery, thereby increasing peak systolic pressure.
- The increased systolic pressure can promote further stiffening.
- Most persons with ISH are not adequately treated to the recommended level (below 140).

Evidence supporting treatment of ISH:

- The Systolic Hypertension in the Elderly Program reported treatment with the generic thiazide chlorthalidone over 5 years reduced cardiovascular events. Treatment of patients with systolic > 160 and diastolic < 90 resulted in reductions in incident coronary heart disease, stroke, and heart failure by 27%, 36%, and 55%. Another trial using the calcium blocker nitrendipine reported similar benefits. A meta-analysis reported that treatment of systolic hypertension over 4 years reduced all-cause death by 13%, and cardiovascular death by 18%.

Management of ISH:

- Lifestyle changes (as with any hypertension); weight control; restricted salt intake; DASH diet; adequate physical activity; and moderate alcohol intake.
- Drug treatment: Five major classes of antihypertension drugs are useful: diuretics,; beta-blockers; ACE inhibitors; angiotensin II receptor blockers; and calcium blockers. Each has been shown in clinical trials to reduce cardiovascular events. When used in recommended doses, their BP-lowering effects are similar, although individuals may respond differently to each drug.
- In the majority of patients, two or more drugs will be required to achieve target BP.
- The current Joint National Committee guidelines (JNC-7; 2003) recommends thiazide diuretics as the initial drug on the basis of proven efficacy and low cost.²
- Other drugs may be preferred initially when there are certain co-existing conditions in patients with IHS:
 - Kidney disease: ACE inhibitor or angiotensin II blocker.
 - Myocardial infarction or heart failure: beta-blocker and ACE inhibitor.
 - Benign prostatic hyperplasia: alpha-receptor blocker. (Watch for orthostatic hypotension)
- The major benefits of therapy are related to the reduction of systolic BP rather than other specific drug actions.
- Thiazides can cause glucose intolerance and diabetes, especially when they induce hypokalemia. The clinical importance of these effects is uncertain, given that thiazides are at least as effective as other drugs in reducing risks of cardiovascular complications.
- Most patients with hypertension should receive a diuretic as part of their regimen. More than one drug is usually required to achieve BP control. Diuretics complement the action of other drugs.
- The use of beta-blockers as first-line therapy has been questioned. A higher incidence of stroke has been reported (especially with atenolol). This could be related to a smaller reduction in BP. Initial therapy with a beta-blocker in the elderly should probably be limited to those with special indications. (No data are available on whether such restrictions should apply to the newer beta-blockers with peripheral vasodilating properties.)

Strategies for improving BP control:

- Inertia on the part of physicians to treat ISH is an important factor limiting optimal treatment.³ Many physicians do not give adequate doses of antihypertension drugs, and do not treat with combinations of drugs to reach target BP. Other factors (including social factors) limit full use of adequate therapy for ISH in the elderly.

- Most elderly patients tolerate antihypertension drugs well. Start low and go slow. Increase doses no sooner than every 2 to 4 weeks.

Guidelines:

- The JNC recommends a thiazide-type diuretic as initial therapy for most patients with ISH unless there are compelling indications for use of other drugs. Another drug(s) can be added if required to achieve target BP goals.
- However, not all authorities agree; The Europeans recommend any of the 5 major classes as first-line therapy. The UK argues against both diuretics and beta-blockers as first-line therapy in favor of ACE inhibitors, calcium blockers, or angiotensin II receptor blockers
- Despite the differences, all guidelines emphasize that the major benefits of therapy are related to lowering BP and controlling hypertension.

Areas of uncertainty:

- Does lowering diastolic BP (eg, to below 60) harm some elderly patients? Myocardial perfusion occurs during diastole. Excessive reduction in diastolic pressure, particularly in patients with coronary artery disease, could be detrimental, causing increased risk of myocardial infarction and death. (The J-curve phenomenon.) However, the overall benefits of reducing BP in patients with ISH are well established.
- Few intervention studies have included patients over age 80 with ISH. One large trial of subjects, average age 84 at enrollment, reported the incidence of stroke was reduced by 50%. However, death was higher (not statistically so). We await clarification.
- The effect of treatment on dementia is uncertain. Some studies report a lowering of incidence. This may be due to reducing the incidence of stroke (vascular dementia).
- It is reassuring that no deterioration of mental function has been noted in trials.
- No trial has been conducted to assess benefit of treatment of systolic 140-160.⁴

Conclusions and recommendations:

- ISH is a major risk factor for cardiovascular and renal disease.
- Abundant evidence favors treatment.
- Many authorities recommend thiazide diuretics as first-line therapy.⁵
- A second and third drug is often required.
- Slowly increase doses and slowly add 2nd and 3rd drugs (at monthly intervals) until target BP is reached.⁶

- Follow by checking potassium, creatinine, and blood glucose levels.

NEJM August 23, 2007; 357: 789-96 “Clinical Practice” by Aram V Chobanian, Boston University Medical Center, Boston, Mass.

1 Figure 2 (page 791) illustrates this point. (Data from Framingham)

Persons below age 50:

Systolic hypertension	~ 20%
Systolic-diastolic hypertension	~ 35%
Isolated diastolic hypertension	~ 45%

Age 50-59 to > 80

Isolated systolic hypertension increases dramatically from	~ 45% to ~95%
Systolic-Diastolic hypertension decreases from	~ 35% to 5%
Isolated diastolic hypertension	~ zero.

- 2 The benefit / harm-cost ratio of thiazides may be the highest among anti-hypertensives.
- 3,4 Many patients with ISH have systolic between 140-160. This gray area may be one reason (and a good reason) why some clinicians resist drug therapy in this subset of elderly patients. These patients must be individualized.
- 5 The great majority of persons with “hypertension” have ISH. Guidelines in the US recommend thiazides for first-line (or add-on) drug therapy. It follows that almost all patients with “hypertension” should receive a thiazide.
- 6 I believe adding lower doses of a second and third drug is related to fewer adverse effects than increasing doses of the first drug to maximum. I would not prescribe more than 25 mg daily of hydrochlorothiazide for fear of hypokalemia. I would add another drug rather than increasing the dose of the thiazide.

The Lower the BP, the Less Likely To Progress To Hypertension, And To Develop Cardiovascular Events.

8-3 RISK OF CARDIOVASCULAR EVENTS AMONG WOMEN WITH HIGH NORMAL BLOOD PRESSURE, OR BLOOD PRESSURE PROGRESSION

The cumulative lifetime risk of developing hypertension approaches 90% in Western populations.

Cardiovascular risk is directly associated with BP across a wide spectrum of BP levels. There is no evidence that a threshold effect exists down to 115/75.

There is little evidence about risk of cardiovascular events in people whose BP levels progress, and who newly develop hypertension.

People in the high normal range have a substantial risk of developing hypertension over a short period of 4 years. Strategies to prevent development of hypertension in people with high-normal BP could have substantial impact of public health.

This prospective study of a large cohort of initially healthy women determined long-term outcomes (related to baseline BP) with regard to: 1) cardiovascular disease, and 2) progression to hypertension.

Conclusion: The cardiovascular risk of women with high normal BP is higher than that of women with normal BP. The cardiovascular risk of women who progress to hypertension is increased shortly after a diagnosis of “pre-hypertension” is made.

STUDY

1. The Women’s Health Study entered over 39 000 female health workers beginning in 1993. All were age 45 and older, and were free of cardiovascular disease and other major illnesses.
2. Obtained information on baseline variables by questionnaires. All gave complete self-reported information about BP, history of hypertension, and anti-hypertension treatment.
3. At baseline, classified subjects into 4 predefined BP categories:
 - A. “Optimal” Below 120/75 (n = 12 549; 32%)
 - B. “Normal” 120-129/75-84 (n = 11 326; 29%)
 - C. “High normal” 130-139/85-90 (n = 4988; 13%) [This was the reference group.]
 - D. “Hypertension” 140/90 and above (n = 10 459; 26%) Also defined established hypertension as a self-reported history of hypertension, or taking anti-hypertension treatment.
4. Analyzed incident hypertension among over 28 000 women without hypertension at baseline.
5. Followed-up for a median of 10 years with repeated questionnaires. Follow-up was over 97% complete.
6. Main outcome measures: primary composite endpoint = (cardiovascular death; myocardial infarction; or stroke), or progression to hypertension among the over 28 000 women without hypertension at baseline.

RESULTS

1. Major cardiovascular events over 10 years:

After 10 years, major cardiovascular events occurred in 2.5% of subjects.

Women with BP over 140/90 had the highest event rate of major events (4.3%).

There was a strong and consistent decrease in event rates as baseline BP was lower:

	< 120/75	120-129/75-84	130-139/85-90	>140/90
Adjusted hazard	0.51	0.61	1.0 (referent)	1.30

Women with BP 120-129/75-84 had a 39% lower risk of events compared with women with BP 130-139/85-90.

Women with BP under 120/75 had a 49% lower risk of events compared with BP 130-139/85-90.

Women with BP over 140/90 had a 30% higher risk of events compared with BP 130-139/85-90.

Women with BP over 140/90 had a much greater risk of stroke than women with BP 130-139/85-90

(Hazard ratio = 1.6. Risk of coronary events did not differ significantly between these two groups.)

2. Progression to hypertension:

Of the 29 000 women with BP under 140/90 at baseline, 30% developed BP over 140/90 during follow-up.

After 5 years, risk of developing incident hypertension rose in a strong, graded and consistent manner according to baseline BP:

	< 120/75	120-129/75-84	130-139/85-90
Developing BP > 140/90 (%)	8	23	52
After 10 years, risk of developing incident hypertension increased			
Developing BP > 140/90 (%)	15	34	64

3. BP progression and cardiovascular events:

Women who progressed to BP over 140/90 had a higher event rate during follow-up than women who remained below 140/90.

Women without progression to BP over 140/90 had a 36% lower risk of events than women who progressed to over 140/90.

Women who at baseline had a BP under 120/75 and 120-129/75-84 and progressed to BP over 140/90 had a 30% lower risk of cardiovascular events than women with BP 130-139/85-90 who progressed to over 140/90.

DISCUSSION

1. After age, systolic BP was the strongest risk factor in the Women's Health Study.
2. "Women's risk of having a major cardiovascular event is lower at lower blood pressure without evidence of a threshold effect."
3. The risk of women with a baseline BP of 130-139/85-90 having major cardiovascular event was 64% higher compared with women with BP 120-129/75-84.
4. Women who progress to BP over 140/90 need to be identified early. Developing BP over 140/90 during the first 4 years of follow-up was related to a 56% increased risk of major cardiovascular events during the ensuing 6 years.
5. Preventive efforts to reverse progression of BP and reduce cardiovascular events, should be focused on people with "high-normal" BP (130-139/85-90). Physical exercise and dietary interventions may lower BP.
6. Women with BP 130-139/85-90 have an increased risk of type-2 diabetes and dyslipidemia. A multi-interventional program targeting all risk factors should be the most effective approach to reduce risk.
7. "Whether drug treatment should be used in people with BP 130-139/85-90 is highly controversial. No trial to

date has examined this potential benefit. Thus, without hard endpoint data, blood pressure lowering drugs cannot be recommended.”

CONCLUSION

As compared with women with BP 130-139/85-90, women with BP below 130-139/85-90, over 10 years, had a substantially lower risk of experiencing cardiovascular events and developing BP over 140/90.

Individuals with BP 130-139/85-90 need close follow-up and lifestyle modifications.

BMJ September 1, 2007; 335; 432-36 Original investigation based on the Women’s Health Study, first author David Conen, Harvard Medical School, Boston Mass.

“The Secret Of The Care Of The Patient Is In Caring For The Patient”¹

8-4 DIGNITY AND THE ESSENCE OF MEDICINE: The ABC and D of Dignity-Conserving Care.

“To the typical physician, my illness is a routine incident in his rounds, while for me it’s the crisis of my life. I would feel better if I had a doctor who at least perceived this incongruity. I just wish he would give me his whole mind just once, be bonded to me for a brief space, survey my soul as well as my flesh, to get at my illness, for each man is ill in his own way”²

Being a patient refers to an acquired vulnerability and dependency imposed by changing health circumstances. “Relinquishing autonomy is no small matter.” When patients experience a radical unsettling of their conventional sense of self, and a disintegration of personhood, suffering knows few bounds. To feel sick is one thing, but to feel that who we are is being threatened or undermined—that we are no longer the person we once were—can cause despair affecting body, mind, and soul.

How do healthcare providers influence the experience of patienthood, and what happens when this frame of reference dominates how they view people seeking their care? The answers begin by examining the relationship between patienthood and notions of dignity. “How patients perceive themselves to be seen is a powerful mediator of their dignity.” The more healthcare providers are able to affirm the patients’ values—that is, seeing them as they are, rather than just the illness they have—the more likely patients’ sense of dignity will be upheld.

When personhood is not affirmed, patients are more likely to feel they are not being treated with dignity and respect. Not being treated with dignity and respect can undermine a sense of value and worth. Patients who feel that life no longer has worth, meaning, or purpose are more likely to feel they

have become a burden to others, and patients who feel they are little more than a burden may start to question the point of their continued existence.

“Treatment of disease takes its proper place in the larger problem of the care of the patient.”

Kindness, humanity, and respect, the core values of medical professionalism are often overlooked. The author suggests an A,B,C,D of dignity-conserving care.

A Attitude:

- How would I be feeling if I were in this patient’s situation?
- The attitude of the physician is contagious. What the physician believes about the patient can affect the patient profoundly.
- People who are treated like they no longer matter will act and feel like they no longer matter.
- Patients look at health care providers as they would in a mirror, seeking a positive image of themselves and their continued sense of worth.

B Behavior:

- Once health care providers are aware that they play an important role in mediating patients’ dignity, several behaviors should logically follow.
- Behavior toward patients must always be predicated on kindness and respect.
- Always ask the patient’s permission to perform a physical examination.
- Always, as far as possible, take time to set patients at ease and show that you have some appreciation for what they are about to go through.
- Act in a manner that shows the patient that she has your full and complete attention. (*Listen to the patient !*)
- When speaking to the patient, try to be seated at the patient’s eye level.
- Use language that the patient understands.
- Always ask if the patient has any more questions.

C Compassion:

- Requires a discourse about the health care provider’s feelings.
- It refers to a deep awareness of the suffering of another, coupled with the desire to relieve it.
- Compassion may be expressed by an understanding look; a gentle touch on the shoulder, arm, or hand; and some form of communication (spoken or unspoken) that shows some recognition of the human stories that accompany illness.

- “I’d like my doctor to scan me, to grope my spirit as well as my prostate. Without some such recognition, I am nothing by my illness.”²

D Dialogue:

- Dialogue is a critical component of dignity-conserving care.
- The practice of medicine requires the exchange of extensive information within a partnership whose tempo is set by gathering, interpreting, and planning according to new and emerging details.³
- At its most basic, dialogue must acknowledge personhood beyond the illness itself, and recognize the emotional impact of illness. “This must be very frightening to you”.
- Dialogue should routinely be used to acquaint the health care provider with aspects of the patient’s life that must be known to provide the best care possible.
- Obtaining the essential context about the impact of the illness on the personal life of the patient is an indispensable element of dignity-conserving care.

“For anyone privileged to look after patients, at whatever stage of the human life cycle, the duty to uphold, protect, and restore the dignity of those who seek our care embraces the very essence of medicine.”

BMJ July 28, 2007; 335: 184-187 “Analysis”, by Harvey M Chochinov, University of Manitoba, Winnipeg, Canada

1 Francis Peabody 1927

2 The late Anatole Broyad, essayist and former editor of the New York Times Book Review.

3 In this regard, I would add—promptly reporting to the patients results of laboratory tests, x-rays, and pathology reports. Promptness is a basic component of dialogue with the patient, and is an expression of caring and concern for the dignity of the patient.

An editorial in this issue of BMJ, first author Irene J Higginson, King’s College, London comments and expands on this article:

The Oxford English Dictionary defined dignity as “the state of being worthy of honour or respect”, or “high regard or estimation”.

The 1998 Declaration of Human Rights of the European Union recognizes dignity as a human right.

The elderly may lose the will to live because: feeling they are a burden on others; depression; and other symptoms, including breathlessness. Dignity appears to be a core concept underlying these factors.

Three overarching themes are identified as applying to dignity: respect and recognition; participation in care; and dignity in care. Loss of independence, fear of becoming a burden, not being involved in decision making, lacking access to care (including palliative care facilities), and some attitudes of staff, especially when people feel vulnerable and lacking power, were all identified as fracturing the sense of dignity. Spiritual matters are also important in dignity, and are strongly associated with communication, both between professionals and patients and between patients and families.

Understanding the different cultural meanings of symptoms, needs, and dignities is important when encountering patients from different cultural and ethnic backgrounds.

Spending time with the patient is important.

Perhaps Chochinov's ABCD should be the first mnemonic taught to professionals entering health and social care, even before the ABC of airway, breathing, and circulation.

A quote from Tolstoy's *The Death of Ivan Ilyich*: "It was comfortable when Gerasim sat with him sometimes the whole night through...Gerasim was the only one who did not lie; everything he did showed that he alone understood what was happening, and saw no need to conceal it...and so the relation was a comfort to him."

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Are Our Very Old Patients Taking Too Many Medications?

8-5 PREVENTIVE HEALTH CARE IN ELDERLY PEOPLE: Needs Rethinking

"It is an art of no little importance to administer medicines properly; but, it is an art of much greater and more difficult acquisition to know when to suspend or altogether omit them." *Philippe Pinel 1745-1826*

Preventive health care aims to delay the onset of illness and disease, and to prevent untimely and premature deaths.

How does such health care apply to people who have already exceeded an average lifespan?

Could it be that—"Rather than prolonging life, preventive treatments in elderly people simply change the cause of death—the manner of dying"

Preventive interventions are now encouraged regardless of age. This can be harmful and expensive. In rapidly aging populations, we urgently need to reappraise the complex and uncomfortable relations between age discrimination, distributive justice, and quality and length of life.

In developed countries, the rates of death from infectious diseases have been reduced. People now live longer to face the "new" epidemic of cardiovascular disease which has been the focus of huge investment and endeavor in health promotion.

Our bodies have a finite functional life. Age is a fundamental cause of disease. By using preventive treatments to reduce risk of a particular cause of death in elderly people, are we simply changing the cause of death, rather than prolonging life?

Three factors fuel this possibility:

1. Single disease perspectives lure researchers and guidelines groups into assuming that improved outcomes for the index condition means that everyone with that condition should be treated, irrespective of the overall effects on population mortality and morbidity.

2. Sensitivity about age discrimination prevents us from looking differently when dealing with an elderly population.
3. Drug companies make huge financial gains if effective interventions in relatively small populations become standard care for all people at risk of that condition.

The number needed to treat (NNT) is calculated from the absolute reduction in risk resulting from a treatment. (Ie, is the reciprocal of the absolute risk reduction.) If, over a given time, a drug reduces a risk by 2% [$2 / 100$] as compared with a placebo, then 50 patients [$100 / 2$] must be treated over that time to result in benefit to one patient. This measure is most valuable in younger patients in whom a single disease is more likely to have a significant effect on morbidity and mortality. The NNT works best with acute conditions and less well with chronic conditions.

In older patients, the likelihood of many compounding diseases increases, and the absolute risk of dying is higher because they are nearer the end of their life. The effect of a specific treatment may then minimally affect survival. (The effect of statin drugs to prevent cardiovascular disease is an example.)

Currently, we use evidence from younger populations and extrapolate this to elderly populations. Anxiety about age discrimination means that no upper age limit exists for assessing cardiovascular risk.

However, evidence for the effects of prevention of heart disease is scant in elderly patients.

The largest of statin drug study (pravastatin vs placebo) in the elderly (5000 patients age 70-82 over 3 years) reported a 2.1% benefit on mortality and morbidity from cardiovascular disease. (NNT for 3 years to benefit one patient = 48). Pravastatin provided no benefit in elderly women. All-cause mortality stayed the same, inferring that morbidity and mortality from other causes (eg, cancer) must have increased.

“We are seeing a contemporary phenomenon that is historically unprecedented.”

“Perhaps we are seeing diminishing returns of prevention on overall life extension in older age.”

Many patients fear the manner of dying more than death itself. Many regard coronary heart disease as a “good way to go” in old age. “By providing treatments designed to prevent particular diseases, we may be selecting for another cause of death unknowingly, and certainly without the patient’s informed consent. This is fundamentally unethical.”

The best interests of elderly people might lie in investing in health care that will genuinely relieve suffering.

The problem is not the data. It is the way they are interpreted and communicated to practitioners and patients.

“We should not carry on extrapolating data from younger populations and using linear models that use absolute risks of disease-specific mortality and morbidity rather than all-cause mortality and morbidity.”

BMJ August 11, 2007; 285-87 “Analysis”, commentary, first author Dee Mangin, Christchurch School of Medicine, University of Otago, New Zealand

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“To Help People Live As Well As Possible In The Face Of Advanced Incurable Disease”

8-6 UNDERSTANDING HOSPICE—An Underutilized Option For Life’s Final Chapter

- Hospice was introduced in the US 30 years ago. It was added as a Medicare entitlement in 1983. It is now a part of mainstream medicine. In 2005, more than 1.2 million Americans received hospice care. The percentage of Medicare patients who died while enrolled in hospice increased by 50% between 2000 and 2004.
- The expertise of physicians specializing in hospice and palliative care medicine was recognized in 2006, when the field was accredited as a fully independent medical subspecialty
- Despite increased use, many aspects of hospice care are still misunderstood by both physicians and patients. Fewer than half of hospice patients have terminal cancer. Many have other end-stage illnesses: cardiac disease, dementia, pulmonary disease, stroke, and debility.
- Medicare is the primary payer for hospice care in approximately 80% of cases.¹ Care is most often provided in the patient’s home.
- Other hallmark hospice services include intensive emotional and spiritual counseling, and bereavement support for at least one year after the patient’ death.
- Hospice care can successfully address critical end-of-life concerns: dying with dignity; dying at home; dying without unnecessary pain; and reducing the burden on family and caregivers.
- Family satisfaction with hospice care is very high—98% of families are willing to recommend hospice care to others.
- Although at least 6 months of care are provided, the median length of hospice stay is only 26 days. One third of patients referred to hospice are referred during the last week of life. Factors contributing to late referral include: application of a curative model to end-stage incurable illnesses; Medicare’s per diem reimbursement to hospice which precludes costly aggressive therapies; and the mistaken view that patients must have a do-not-resuscitate order.
- The most important factors in delayed referrals appear to relate to physician attitudes. Many oncologists and other physicians regard death of a patient as a professional failure. Many fear that they will destroy their patient’s hope, which physicians may believe lies only in efforts to increase the quantity of life rather than the quality of life. Physicians receive little training in compassionate discussion of bad news. Perhaps the most critical factor is that physicians view hospice care as something reserved for the imminently dying, instead of a service designed to help people live as well as possible in the face of advanced incurable disease.
- To determine eligibility, the attending physician and hospice medical director must certify, to the best of their judgment, that the patient is more likely than not to die within 6 months. Responsibility for determining ongoing eligibility rests with the medical director. Medicare provides broad eligibility

guidelines for many medical conditions. (*Listed in a box on page 323. Includes Alzheimer’s disease, pulmonary disease, heart disease, and severe debility [no one specific terminal diagnosis identified].*) These guidelines do not represent hard-and-fast requirements. Coexisting conditions, or a particularly rapid functional decline, can outweigh strict adherence to written requirements.

- After enrollment, a plan of day-to-day care is developed in accordance with the needs and wishes of the patient and family, often tempered by the presence or absence of caregivers. The primary goal is to ensure that pain, and such symptoms as insomnia, dyspnea, depression, constipation, agitation, nausea, and emotional and spiritual distress are aggressively addressed. Most clinical care is provided by hospice nurse. The vast majority of hospice patients are not seen by a physician.
- To address non-medical needs, a social worker associated with many hospices may arrange for an hour of home care 5 days a week, and a volunteer to shop for groceries and provide companionship. The social worker may talk with the family and identify the need to address anxieties and fears of family members about the future. Visits by the hospice chaplain may be suggested.
- Hospice emphasizes an interdisciplinary approach to care. Every 2 weeks the team—nurses, social workers, pastoral counselor, bereavement coordinator, and the medical director—meet to discuss the needs of patient and family. In the interim, nurses consult with attending physicians. One serious challenge is that attending physicians typically receive little to no training in the use of medications for pain and symptom management, and thus rely on a presumed level of expertise on the part of the hospice nurse. Such an assumption of competency may or may not be well founded. Attending physicians should routinely evaluate recommendations, and should have a low threshold for reviewing cases with the hospice medical director.
- As the population ages, more patients may seek hospice care. Physicians should become more familiar with hospice.

NEJM July 26, 2007; 357: 321-24 “Perspective”, commentary by Gail Gazelle, Brigham and Women’s Hospital, President of MD Can Help, Boston Mass.

The Boston hospice must be one of the best.

1 Medicare covers most expenses related to a terminal illness. There may be some additional costs. Some expenses maybe covered by Medicaid and private insurance. Not-for-profit hospices generally have as their mission to serve all patients, even when they cannot access reimbursement for services.

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“Patients Who Awaken With Paresthesias Or Pain In The Median Nerve Distribution Have CTS Until Proven Otherwise.”

8-7 CARPAL TUNNEL SYNDROME: Clinical Review

“CTS is the most common peripheral nerve problem in the UK.” It is related to considerable employment and health costs. If recognized early it is readily treatable.

It results from compromise of median nerve function at the wrist, caused by increased pressure in the carpal tunnel, an anatomical compartment bounded by the bones of the carpus and the transverse carpal ligament. Tissue pressure in the tunnel is much higher than normal—up to over 100 mm Hg (depending on wrist position) vs a top normal of 30. Pressures are raised by wrist flexion and extension.

Intermittent or sustained high tissue pressure impairs microvascular circulation in the nerve, and leads to spurious generation of action potentials, local demyelization, and ultimately, axonal loss. It may also stimulate the proliferation of subsynovial connective tissue. Anything that reduces the dimensions of the tunnel or increases the volume of its contents will predispose to CTS.

Many medical conditions have been reported to be associated with CTS, but most cases are idiopathic.

Genetic predisposition may be a prediction factor. Obesity is a risk factor in younger patients. The role of occupational and recreational hand use in causation remains controversial. Most patients report that heavy use of the hands aggravates symptoms.

Incidence peaks in the late 50s (particularly in women) and in the late 70s. Elderly patients tend to present with more severe symptoms, and the majority have thenar atrophy. CTS in older patients is easily confused with other, less treatable disorders. CTS is also common, transiently, in late pregnancy.

When should CTS be suspected?

“Patients who awaken with paresthesias or pain in the median nerve distribution have CTS until proven otherwise.”

The syndrome encompasses a range of severity (from transient subjective sensory symptoms to irreversible thenar wasting and sensory loss. It should be recognized before permanent deficits develop.

Some patients also complain of sensory disturbance or pain radiating up the arm to the shoulder.

About half of the cases are bilateral, with first presentation in the dominant hand.

Daytime symptoms may be noticed with particular activities, especially those that involve holding the arms raised.

Patients may complain of a sensation of swelling of the hand and fingers, but visible swelling is rare, and should prompt consideration of other conditions.

Sensory loss in the median nerve territory and weakness and wasting of the thenar muscles are reliable but late indicators.

The American Academy of Neurology (AAN) has proposed guidelines:

Dull, aching discomfort in the hand, forearm or upper arm

Paresthesia in the hand

Weakness or clumsiness of the hand

Provocation of symptoms by sleep

Provocation of symptoms by sustained hand and arm position—by flexion of the wrist to 90 degrees for 60 seconds [Phalen’s sign].

Provocation of paresthesias by tapping over the carpal tunnel [Tinel’s sign].

Provocation of symptoms by repetitive actions of the hand or wrist

Mitigation of symptoms by changing hand position or shaking the wrist

The likelihood of the diagnosis increases with the number of standard symptoms

Nerve conduction studies have been regarded as the diagnostic “gold standard”

CTS is not necessarily progressive. Symptoms may fluctuate slightly for many years, depending on periods of heavy hand use, without progressing to irreversible nerve damage. It may even remit spontaneously.

Complex investigations are not necessary before starting conservative treatment.

Treatment:

Few treatments are supported by good quality evidence.

The AAN suggests:

A. Splinting, activity modification, and NSAIDs. Splinting is by a removable wrist brace at a neutral angle, especially at night.

B. Steroids: Oral, or by injection or iontophoresis. Injection has few systemic effects and a low incidence of local complications. The initial response is good (up to 70%). Most relapse. There are anecdotal reports of patients receiving multiple injections over time with benefit.

C. Surgery: For patients failing conservative treatment, decompression is considered the definitive treatment. It can be done as day-surgery under local anesthesia. It has low risk and usually provides permanent and complete relief.

BMJ August 18, 2007; 335: 343-46 “Clinical review” by Jeremy D P Bland, Kent and Canterbury Hospital, Canterbury, UK

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A Critical Clinical Decision

8-8 WARFARIN VERSUS ASPIRIN FOR STROKE PREVENTION IN AN ELDERLY COMMUNITY POPULATION WITH ATRIAL FIBRILLATION

Twelve percent of people over age 75 have AF; over 50% of people with AF are over age 75. Stroke risk increases with age.

AF is a major risk factor for stroke. Prevention of stroke in the elderly with AF is a major concern.

Anticoagulation with warfarin is highly effective in reducing risk of stroke, but is associated with a higher risk of hemorrhage compared with aspirin, especially in the elderly.

Concerns have been expressed over the applicability of anticoagulation to elderly patients with AF in the primary care setting. Older patients are under-represented in trials. Uncertainty over the optimum treatment of elderly people with AF is evident in current guidelines. Guidelines recommend use of anticoagulants for patients who have two or more risk factors for stroke, one of which is age over 75. (See CHADS score listed below.) The targeted INR in these patients can be lower than in trials of younger patients. (Eg, 2.0 to 2.5)

Confusion influences practice. Fewer than half of elderly patients with AF are treated with warfarin.

This trial assessed whether warfarin reduced the risk of major stroke, arterial embolism, and hemorrhage compared with aspirin in elderly patients with AF.

Conclusion: The data support the use of warfarin (vs aspirin) anticoagulation in patients over age 75 with AF.

STUDY

1. Prospective, randomized, open-label trial entered 973 patients recruited from 260 primary care practices.

All were over age 75 (mean age = 82; 20% over age 85). All had AF (or flutter) identified by a study ECG.¹

2. Randomized to 1) warfarin with a target INR of 2.0 to 3.0, or 2) aspirin 75 mg daily. Follow-up for a mean of 2.7 years.

3. Primary end-point = a fatal or disabling stroke (ischemic or hemorrhagic), intracranial hemorrhage, or clinically significant arterial embolism. Analysis by intention-to-treat.

4. Over 4600 patients with AF were identified; over 3600 (79%) were excluded² for: history of rheumatic heart disease; major hemorrhage within 5 years; intracranial hemorrhage; peptic ulcer proven by endoscopy in the previous year; esophageal varices; allergy to study drugs; a terminal illness; surgery within 3 months; or BP over 180/110. Patients were also excluded if their primary care physician judged, on the basis of risk factors for stroke and hemorrhage, that the patient either should, or should not, be on warfarin. Thus, random allocation was considered to be ethical because inclusion was restricted to patients for whom there was clinical uncertainty as to which of the two drugs should be used.

5. Frequency of INR determinations ranged from once a week or less to every 12 weeks (if the INR was stable).

6. CHADs score was 1-2 in 75%; 3-6 in 25% [Congestive heart failure (1 point); Hypertension (1 point); Age > 75 (1 point); Diabetes (1 point); previous Stroke or TIA (2 points)—a possible 6 points.

(Most subjects in this trial were in the lower end of risk for stroke.)³

RESULTS

1. Adherence to warfarin therapy = 67%; adherence to aspirin = 76% for the entire time.⁴

2. INR under 2.0 19% of the time; over 3.0 14% of the time. Median INR = 2.3.

3. There were fewer primary events in the warfarin group; 1.8 per year vs 3.8 per year for aspirin.

[Absolute difference = 2.0%; NNT for one year with warfarin to prevent one event = 50]

4. Risk of stroke per year: Warfarin (%) Aspirin (%) NNT for one year to benefit one

All stroke	1.6	3.4	55
Fatal stroke	1.0	1.6	166
Disabling (not fatal)	0.6	1.8	83
Ischemic stroke	0.8	2.5	59
Hemorrhagic stroke	0.5	0.4	--
5. All major hemorrhage	1.9	2.0	--
6. Systemic emboli:	0.1	0.2	--
7. All-cause death	8.0	8.4 ⁵	--

8. There was no evidence of increased risk of a major hemorrhage in patients on warfarin compared with those on aspirin.

DISCUSSION

1. The degree of INR control in this study resembles the control in typical primary care practices in the UK.⁶
2. “We have shown that warfarin is more effective than aspirin in prevention of stroke in people with atrial fibrillation who are age 75 or over.”
3. The investigators cite a meta-analysis (JAMA 2002) comparing warfarin with aspirin in patients with AF. The meta-analysis reported a *doubling* of risk of major hemorrhage in those on warfarin.
4. “The similarity in risk of major hemorrhage between patients on warfarin (in this trial) and those on aspirin is surprising.”

CONCLUSION

These data lend support in the use of anticoagulation for all people over age 75 years who have atrial fibrillation, unless there are contraindications, or the patient decides that the size of the benefit is not worth the inconvenience of the treatment.

“Age itself should not be regarded as a contraindication to anticoagulation therapy.”⁷

Lancet August 11, 2007; 370: Original investigation by the Birmingham (UK) Atrial Fibrillation Treatment of the Aged Study (BAFTA), first author Jonathan Mant, University of Birmingham UK.

- 1 It is essential that AF (either sustained or intermittent) be definitely established before anticoagulation treatment is begun. AF may not be immediately evident. Definitive documentation by ECG is necessary. Anticoagulating a patient without AF would be a grievous error. It is also essential to rule out common and associated causes of AF which may be corrected (Eg. hypertension, thyrotoxicosis, valvular heart disease, and alcohol use (“holiday heart”).
- 2 The high percentage of exclusions would limit application of anticoagulation in patients with AF in the US.

- 3 Many authorities recommend aspirin for patients at the low end of the score.
- 4 Poor adherence complicates analysis of benefits and risks.
- 5 See the previous commentary about extending life in the elderly.
- 6 I doubt that primary care clinicians in the US can match this record.
- 7 I believe this is much too great a stretch.

A Clinical Update

8-9 SPORADIC PRIMARY HYPERPARATHYROIDISM;

DEFINITION AND EPIDEMIOLOGY

Primary hyperparathyroidism (**PHPT**) is a biochemical syndrome caused by continuous increased secretion of parathyroid hormone (**PTH**) from one or more of the parathyroid glands.

PHPT is a common disorder with an annual incidence of about 2 cases per 10 000. Women account for the majority.

Most cases are sporadic and caused by a single adenoma. Fewer cases are caused by multiglandular disease. Fewer than 1% by carcinoma. Classical osteitis fibrosa cystica is rare.

PATHOPHYSIOLOGY

PTH is an 84-amino-acid single chain peptide. PTH is continuously secreted. Its half-life is measured in minutes.¹

The primary function of the parathyroid glands is to maintain extracellular calcium concentrations within a narrow normal range. Any tendency toward hypocalcemia (as with a calcium-deficient diet) leads to increased PTH secretion. The homeostatic role of PTH preserves normal serum calcium concentrations at the cost of bone destruction. High serum calcium concentrations tend to suppress PTH secretion, maintaining the steady calcium-state.

Persistently increased PTH activates PTH-receptors and vitamin D₃ receptors in bone, kidney, and small intestine:

In bone: PTH acts directly to increase the rate of dissolution of bone mineral, and thus elevate serum calcium. Continuous excess secretion of PTH (as in PHPT) leads to increased osteoclastic-mediated bone resorption, causing osteoporosis and increased serum calcium levels.

In kidney: PTH acts directly on the kidney to reduce renal clearance of calcium, increasing calcium resorption, returning more calcium back into the extracellular fluid. PTH also activates an enzyme which promotes the synthesis of vitamin D₃, leading to:

In small intestine: Increasing resorption of calcium, and elevating serum calcium concentrations.

SYMPTOMS

Many cases of PHPT are apparently asymptomatic. But, some investigators feel that truly asymptomatic PHPT is not common. If history-taking is accurate enough, and if mental status is properly assessed, most patients will have some suggestive symptoms. Fatigue and irritability are more common than in the general population.

The disease may be suspected by presence of calcium kidney stones, premature osteoporosis, and fractures.

In 5% of cases, severe hypercalcemia can occur causing a parathyroid crisis: hypercalcemia (> 14 mg/dL); dehydration; renal failure; neurological deterioration (including coma) ²

DIAGNOSIS:

The diagnosis of “asymptomatic” PHPT is increasing as a result of routine serum calcium measurement. The biochemical hallmark is hypercalcemia (serum Ca over 10.2 mg/dL).

PHPT is the only cause of hypercalcemia associated with high concentrations of serum PTH. In all other conditions associated with high serum calcium serum PTH is low. (High serum calcium levels usually inhibit PTH secretion.)

Osteopenia and osteoporosis, increased markers of bone-turnover, and calcium kidney stones are common findings.

COMPLICATIONS OF PHPT:

Complications include renal lithiasis, nephrocalcinosis, calcification of heart valves, calcifying pancreatitis, and chondrocalcinosis

The prevalence of hypertension doubles that of the general population.

An increased risk of myocardial infarction has been reported.

MEDICAL TREATMENT:

Is reserved for patients with severe hypercalcemia or with a parathyroid crisis: aggressive fluid replacement; correction of electrolyte imbalance; and, if hypercalcemia is refractory, intravenous bisphosphonate.

Asymptomatic, mild, and moderate PHPT should not be treated medically. If surgery is not available for whatever reason, yearly surveillance, good hydration, and mobility is advisable.

SURGICAL TREATMENT:

Parathyroidectomy is the only curative treatment.

The agreed indications for surgery:

1. Calciuria > 400 mg/24 hours);
2. 30% reduction in creatinine clearance;
3. Osteoporosis (T score < 2.5)
4. Age below 50
5. Serum calcium above 11.2 mg/dL

If there are no surgical contraindications, surgery should be discussed with the patient and offered to almost all. The disease will progress in 30% of cases³; long-term medical follow-up is expensive; there are problems with long-term compliance; and there is increasing risk of fractures and cardiovascular morbidity and mortality.

Surgery is curative in 95%, with less than 2% permanent complications, and virtually no mortality.

With the increasing use of parathyroid scintigraphy, surgery has undergone a radical change. This allows preoperative localization of solitary adenomas in 75% of patients. Selective parathyroidectomy lowers risk of postoperative hypocalcemia, reduces operation time, and is associated with excellent success rates.

Most focused parathyroidectomy is done under general anesthesia through a small incision. Patients are discharged the same or the next day.

Bilateral parathyroid exploration is required for patients with inconclusive localization studies, or suspected multiglandular disease.

Serum PTH has a half-life of 5 minutes. Quick intraoperative measurement of serum PTH has been recommended. PTH levels can be expected to drop soon after focused parathyroidectomy if no other diseased gland is present. A measure of success is a drop in serum PTH levels of at least 50% within 10 minutes.

PROGNOSIS AFTER SURGERY

Parathyroidectomy improves neuromuscular symptoms and quality-of-life, increases bone-mineral density, and halts renal stone formation.

After parathyroidectomy, a reduction in fracture risk (especially at the hip) occurs within 1 year, and persists for 10 years.

An improvement in cardiovascular function occurs: reductions in maximum BP; reduction in ST segment depression; reduction in ventricular premature beats. A higher prevalence of left ventricular hypertrophy has been seen in PHP. Even when adjusted for hypertension, surgery results in a measurable decrease in LVH.

The risk of myocardial infarction increases up to 10 years before surgery, and declines to normal within one year after surgery.

Lancet August 11, 2007; 370: 468-70 "Comment" first author Antonio Sitges-Serra, Hospital del Mar, Barcelona, Spain.

This excellent review prompted me to expand on some of the clinical points by consulting Harrison's textbook of Medicine 15th edition.

1 When synthetic PTH is administered once daily its effect on bone changes from bone dissolution to bone formation. Thus recombinant PTH [teriparatide; *Forteo*] can be used therapeutically by once-daily injections to increase bone formation.

2 In a patient with unexplained coma or extreme mental disturbance, a very high serum calcium found unexpectedly on a biochemical profile will lead to a dramatic and favorable outcome.

3 This means that in many cases the disease does not seem to progress, even over 10 years. It remains at a new steady state (a resetting) of serum calcium levels. The production of PTH is set higher; the higher serum calcium then suppresses PTH secretion at the higher set point.

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Associated With Long-Term Weight Loss And Decreased Overall Mortality.

8-10 EFFECTS OF BARIATRIC SURGERY ON MORTALITY IN SWEDISH OBESE SUBJECTS

Obesity is associated with increased mortality. The life expectancy of severely obese persons is reduced by an estimated 5 to 20 years.

Weight loss improves cardiovascular risk factors. No prospective studies have reported whether weight loss decreases mortality. (In fact, several observational epidemiological studies suggest that weight reduction is related to increased mortality.) One problem may be the difficulty in distinguishing intentional vs unintentional weight loss. Weight loss may be a consequence of the conditions which lead to death.

The use of bariatric surgery has increased dramatically. Indeed, it is still the only available means of establishing long-term weight reduction in severely obese persons. Whether it has had a long-term effect on mortality is unclear.

This study examined whether bariatric surgery was associated with a lower mortality as compared with conventional weight loss therapy.

Conclusion: Surgery was associated with lower risk of death during a follow-up of 11 years.

STUDY

1. Prospective, controlled study involved over 4000 obese subjects. (The majority female; mean age = 46; age range 37 to 60; mean BMI = 42). Patients were recruited from September 1987 to January 2001.
2. All males had a BMI of at least 34; females at least 38. [These BMI cutoffs correspond to about a doubling of rate of death.] Subjects with hypertension, diabetes or lipid disturbances were allowed to participate, as were patients who had a myocardial infarction or a stroke more than 6 months prior.¹
3. Half underwent bariatric surgery; half (a matched control group) received conventional treatment for weight loss. Three surgical methods were used: adjustable or un-adjustable banding (n = 376); vertical banding (n = 1396); and gastric bypass (n = 265).
4. The control group received the customary non-surgical treatment for obesity at their center of registration. This ranged from sophisticated life-style interventions and behavioral modification to no treatment.
5. Mean follow-up = 11 years.

RESULTS

1. Average weight change in the control subjects = + or - 2%.

2. Maximum weight loss in the surgery group occurred in the first 2 years: gastric bypass 32%; vertical banding gastropasty 25%; banding 20%.
3. After the first 2 postoperative years, an increase in weight was observed in all surgical groups.
The “relapse curve” leveled off after 10 years. At 10 years, weight loss stabilized at 25%, 16%, and 14%.
4. Deaths: control group 129 (6.3%); surgery group 101 (5.0%). Hazard ratio = 0.76 (surgery vs control).
[NNT to benefit one patient-death by surgery over 11 years = 77.]
5. Deaths were higher in subjects who had myocardial infarction and stroke before baseline.
6. The most common causes of death: myocardial infarction (control 25; surgery 13) and cancer (control 47; surgery 29).
7. Death within 90 days of randomization: surgery 5 (4 from peritonitis; one sudden); control 2 (one cancer; one alcohol-related).
8. Among subjects followed for at least 10 years, re-operation or conversion surgeries were common: banding 31%; vertical banding gastropasty 21%; gastric bypass 17%.

DISCUSSION

1. Bariatric surgery was associated with a reduction in overall death in obese persons as compared with conventionally-treated patients.
2. In earlier reports, bariatric surgery was associated with beneficial effects on diabetes, other cardiovascular risk factors, cardiovascular symptoms, progression of intima-media thickness, sleep apnea, joint pain and health-related quality of life.

CONCLUSION

Bariatric surgery for severe obesity was associated with long-term weight loss and decreased overall mortality.

NEJM August 23, 2007; 357: 741-52 Original investigation by the Swedish Obese Subjects Study, first author Lars Sjostrom, Sahlgrenska University Hospital, Gothenburg, Sweden.

1 In many respects, a very high-risk group.

See also “Long-Term Mortality after Gastric Bypass Surgery” NEJM August 23, 2007; 357: 753-61 Original investigations, first author Ted D Adams, University of Utah School of Medicine, Salt Lake City.

This retrospective cohort study included almost 16 000 severely obese patients. Half received gastric by-pass; half were controls.

Over 7 years of follow-up, long-term total mortality was significantly reduced in the surgery group.

Deaths from cancer were also lower in the surgery group. This surprised the authors. Considerable evidence indicates that obesity is related to increased risk of cancer. They offer no explanation other than that cancer screening may improve with weight loss. We await further study.

