Introduction
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Hypertension is the major risk factor for coronary, cerebral and renal vascular diseases and is probably the most important health problem in developed countries. The number of persons identified as having hypertension continue to increase. The great awareness of danger of elevated Blood Pressure along with availability of safer and more effective antihypertensive agents has lead to a therapeutic explosion. Hypertension has become one of the most frequent reasons for visit to physicians as well as leading indication for prescription of drugs.

The past few decades have witnessed in a number of studies of chronic degenerative disease that hypertension is not only a major cause of death and disability but also a principal risk factor for coronary heart disease and its complications. Recognition of these consequences and knowledge of its high prevalence and insidious natural history have brought to us the realization that hypertension is more than an isolated illness. It is a public health problem of enormous magnitude.

The percentage of people in United States who are aware of their hypertension, who are receiving treatment, whose hypertension is controlled have risen progressively. Similar improvement in awareness and control have been reported in other Industrialized countries such as Canada (Joffres et al 1992) and Israel (Green and peled 1992).

As impressive as these data are, most hypertension remain poorly controlled both in Industrialized countries and even more so, in less developed countries. As a result hypertension influenced diseases remain the most common causes of morbidity and mortality in developed societies. Moreover, the main burden associated with hypertension occur not in the relatively few with severe disease but in the masses of patients with Blood Pressure that are only minimally elevated.

There are a number of problem areas in the management of hypertension, one of these is that of non compliance, another area that needs evaluation is the response of patients to better patient education and investigative facilities. These would be brought about by greater physician-patient interaction. The emphasis would also be on the improvement of facilities and of consolidating them. So that all investigations are available at one point.
The effect of these would then be studied on the drug compliance of the patients and the control of Blood Pressure achieved through these measures.

Since there is no dividing line between normal and high Blood Pressure arbitrary levels have been established to define those who have an increased risk of developing a morbid cardiovascular event and or will clearly benefit from Medical therapy.

**Classification of Hypertension in adult aged 18 years and older**

<table>
<thead>
<tr>
<th>Category</th>
<th>Systolic B.P.</th>
<th>Diastolic B.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal</td>
<td>&lt; 120 mm Hg</td>
<td>&lt; 80 mm Hg</td>
</tr>
<tr>
<td>Normal</td>
<td>&lt; 130 mm Hg</td>
<td>&lt; 85 mm Hg</td>
</tr>
<tr>
<td>High Normal</td>
<td>130 - 139 mm Hg</td>
<td>85 - 89 mm Hg</td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage I (mild)</td>
<td>140 - 159 mm Hg</td>
<td>90 - 99 mm Hg</td>
</tr>
<tr>
<td>Stage II (moderate)</td>
<td>160 - 179 mm Hg</td>
<td>100 - 109 mm Hg</td>
</tr>
<tr>
<td>Stage III (severe)</td>
<td>&gt; 180 mm Hg</td>
<td>&gt; 110 mm Hg</td>
</tr>
</tbody>
</table>

Source-- JNC - VI\textsuperscript{th} report of the Joint National Committee on detection, evaluation and treatment of high Blood Pressure.

\textbf{N.B.-} At the time of submission of proforma criteria of JNC V\textsuperscript{th} was used but with publication of JNC VI\textsuperscript{th} in Nov ‘97, JNC VI\textsuperscript{th} criteria is being used.

\textbf{The Decision to Treat:} Before any drug is begun persistence of patients hypertension should be ascertained by multiple measurements over at least a few weeks, preferably at home and at work, unless the pressure is so high (e.g. > 180 / 110 mm Hg) as to mandate immediate therapy.

The major problem with past clinical practice has been the use of the B.P level alone in making the decision for institution of therapy (Aederman 1993). On the basis of the results of the multiple clinical trials where in reductions of B.P. by about 10 / 5 mm Hg resulted in reduction of overall cardiovascular risk by about one third.

\textbf{What level of Blood Pressure should be treated?}

Despite the persistent differences, both in theory and in practice, on the level of B.P. that indicates the need for antihypertensive therapy (Swales 1993) a consensus position can be stated: most patients with
B.P.s persisting above 100 / 95 should be treated, those with persistent pressures between 140 / 90 and 150 / 95 (who account for about 40% of the total) should be treated if they have other major risk factors for premature cardiovascular disease or significant organ damage.

World Health Organisation (WHO) and International Society of Hypertension (ISH) (Guidelines SubCommittee 1993) as well as by the 1993 Joint National Committee recommends that is Physician may elect to withhold antihypertensive drug therapy from patients with B.P. in the 140 - 149 / 90 - 94 range in the absence of target organ damage and other major risk factors.

**Overall AIMS of treatment**

Lowering the Blood Pressure should never be the sole aim of therapy. Ideally all abnormalities associated with hypertension, including shortened life expectancy should be reverted to normal. Overall cardiovascular mortality has been reduced by therapy, primarily a decrease in stroke mortality.

Once good control of Blood Pressure in a patient has been achieved. It may be possible to reduce or withdraw drug therapy.

**Treatment of Hypertension**: It is broadly divided into non pharmacological and pharmacological Treatment.

1) NON PHARMACOLOGICAL

(a) Diet:- Salt restriction is a good strategy in the more salt sensitive population with a goal of 70 mm Hg (1.6 gm) Sodium per day.

A high Potassium intake may significantly reduce the requirement for antihypertension medications. Now some people recommend Calcium supplementation but the exact role of Calcium is not clear.

Restriction of alcohol to one drink (1.5 ounces liquor, 4 ounces wine, 12 ounces beer) does not increase the risk of hypertension but 2-3 drinks are associated with 1.4 fold relative risk of hypertension.

(b) Weight Reduction :- In some studies it has been reported that each Kg of weight loss is associated with 1 mm Hg reduction of Systolic and Diastolic B.P.
(c) Exercise :- It has been shown that men with mild hypertension who exercise for 30 minutes between 40 and 70 % of maximum oxygen consumption per unit time have a post exercise 7 mm Hg decrease in mean arterial pressure which sustained for 13 hours.

(d) Smoking and Tobacco :- Recently have studies using ambulatory B.P. monitoring recognised the major pressure effect of smoking (Mann et al, 1991, Grobb elli et al, 1992), smoke less tobacco (Bolinder et al, 1992) and cigars, if there smoke is inhaled also they raise B.P.

2) PHARMACOLOGICAL
Choice of Drug :- Traditionally, a diuretic has been the first drug advocated by authorities & chosen by most practitioners. Next beta-blockers gained popularity. Even more recently ACE inhibitors ,Alpha Blockers and Calcium Antagonists have become widely used. Choice of drug should not be automatic based upon habit or based upon the intensity of promotional advertising.

The concept of rigid step-care i.e. Almost always starting with a diuretic & going onto a Beta Blocker before a vasodilator is now being replaced by a much more liberal approach .Here the drugs are tailored to the patient for example in the presence of diabetes, or gout Thiazide diuretics are usually contra indicated, whereas ACE inhibitors, Alpha blockers & Ca++ channel blockers are metabolically neutral. In diabetic patients with renal disease there is a special case for the use of ACE inhibitors.

PATIENT GUIDED THERAPY

Proposals for First choice of Anti Hypertensive agents.

<table>
<thead>
<tr>
<th>Situation favouring</th>
<th>Relative contra indications</th>
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<tbody>
<tr>
<td><strong>Diuretics</strong></td>
<td></td>
</tr>
<tr>
<td>Elderly Patient</td>
<td>Pre diabetes &amp; diabetes</td>
</tr>
<tr>
<td>Obesity</td>
<td>Gout</td>
</tr>
<tr>
<td>When cost is important</td>
<td>Hyper lipidemia</td>
</tr>
<tr>
<td>High salt intake</td>
<td>Pre Existing vol. deplition</td>
</tr>
<tr>
<td>Renal disease with sodium retention</td>
<td></td>
</tr>
<tr>
<td>Black ethnic group</td>
<td></td>
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</table>

**Beta blockers**
Angina pectoris
Post infarct prophylaxis
Co-existing Anxiety or Tachycardia
Left ventricular failure
Hyperlipidemia
Diabetes or Prediabetes
Elderly Black.
General C/I like asthma

**Calcium Antagonists**

Maintenance of Metabolic status associated Angina.
Raynaud’s Disease
High Salt intake
Physically active
Black ethnic group
Elderly white

C.C.F.
Severe aortic stenosis
Sick sinus Synd.
Heart block
Verapamil
Diltiazem

**ACE Inhibitors**

High Renin Status
Low salt diet
Renal artery stenosis
Renal impairment
Maintenance of Metabolic Status
L.V Hypertrophy
Diabetic nephropathy
Congestive heart failure
Younger whites

Alpha blockers.

Lipidemia
Prostatism
Severe aortic stenosis
Maintenance of Metabolic status

It is with these background that the current study is being attempted on “A comparative Study of Ca++ channel blockers, ACE inhibitors & Alpha blockers in patients of systemic hypertension.”