pressure in real time. Baroreflex sensitivity, sympathetic and para-
sympathetic activity were then estimated by solving the personalized
mathematical model through nonlinear optimization. Experiments
were carried out with 42 healthy subjects and 17 subjects with car-
diovascular disease (CVD). Each subject wearing the equipment
was asked to stay calm for a moment, and perform sit-to-stand 3 times,
with long enough break in between. Baroreflex sensitivity is estimated
as the slope of the curve of baroreflex firing rate vs blood pressure,
sympathetic activity and parasympathetic activity are defined as the
peak of the sympathetic and parasympathetic outflow vs time curve
respectively.

RESULTS Baroreflex sensitivity estimated for healthy subjects and
CVD subjects are 2.77±1.30 and 1.06±0.88, with P value of 0.006.
Sympathetic activity estimated for healthy subjects and CVD subjects
are 0.24±0.07 and 0.11±0.07, with P value of 0.001. Parasympathetic
activity estimated for healthy subjects and CVD subjects are 0.39±0.12
and 0.71±0.12, with P value of 0.000.

CONCLUSIONS The proposed model-based evaluation of autonomic
regulation of cardiovascular system provides a quantitative, effective
and transportable tool for quantitative measurement of baroreflex
sensitivity, sympathetic and parasympathetic activity. Preliminary
experiments have shown the specificity of these three measures in
discriminant between healthy subjects and CVD subjects with P value
all under 0.05.

GW26-e5384
The Relationship Between Polymorphism of The Angiotsensin Converting
Enzyme Gene and Essential Hypertension in Buyi and Han population in
Guizhou
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OBJECTIVES This study aims to investigate the association of the
polymorphism of angiotensin converting enzymegene (ACE) gene
with essential hypertension (EH) in Guizhou Qianan Buyi and Han
isolated population

METHODS The method of polymerase chain reaction-restriction
fragment length polymorphism (PCR-RFLP) was used to detect the
frequency of each genotype and allele from 250 hypertension patients
(EH group,123 Buyi patients and 127 Han patients) and 204 normo-
tensive subjects (control group,155 Buyi controls and 149 Han con-
trols) in Guizhou Qiannan region.

RESULTS In ACE the frequency distribution of each genotype and
allele of the EH group and control group was accorded with Hardy -
Weinbery genetic equilibrium law (P>0.05). There was sig-
nificant difference in the frequency distribution of ID genotype and D
allele of ACE gene between EH group and control group (P<0.01).
There was significant difference in the frequency distribution of ID
allele in control group and D allele in ACE gene between Buyi patients
and Han controls (P<0.05). There was significant difference in the
distribution of D allele of ACE gene between Han patients and Han controls
(P<0.05)

CONCLUSIONS Our results indicated that the ID genotype and D allele
polymorphism of ACE gene may have a relationship with Buyi EH
patients, while the D allele polymorphism may be related to the Han
EH patients in Guizhou Qiannan region. It’s more likely to suffer from
esential hypertension for Buyi nationality who carry the ID genotype
and D allele of ACE gene than that with no these genotype, but it’s
more possible to suffer from essential hypertension for Han people
who carry the D allele of ACE gene than that with no D allele. The
polymorphism of ACE gene may be one of pathogenic factors of
essential hypertension among Buyi population and Han population in
Guizhou province.

GW26-e0773
Hemodynamics analysis of local carotid artery plaques and implication to plaques
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OBJECTIVES The aim of the study was to investigate the hemody-
namics of in vivo carotid artery using computational dynamics (CFD)
and magnetic resonance angiography (MRA). Analyze the relationship
between hemodynamics changes and atherosclerosis formation and
progression.

METHODS (1) Acquire DICOM (Digital Imaging and Communications
in Medicine) format image data from patients who has received ca-
rotid magnetic resonance angiography. These patients were divided
into normal group and stenosed group.
(2) Import the DICOM format image data into MIMICS software and
reconstruct patient-specific three Dimensional (3D) carotid artery
models.
(3) Import the 3D carotid artery models into ANSYS software.
Apply the ANSYS software for post-processing—ICEM (Integrated
Computer Engineering and Manufacturing) to create infinite element
grids.
(4) Hemodynamics parameters were obtained with a finite volume
method by FLUENT software.
(5) Use the post-processing module of ANSYS software to obtain
visualized pictures of parameter distributions.

RESULTS (1) Blood flow in normal straight artery was laminar, tur-
bulence flow with low velocity occurred at the outer walls of bifur-
cation. However, velocity in local stenosis artery was fast.
(2) The distributions of wall pressure (WP) were uneven around
bifurcations: the apices of bifurcation showed high WP while the outer
walls of bifurcation showed low WP. WP appeared lower in stenosed
region.
(3) The apices of bifurcation showed high WSS while the outer walls
of bifurcation showed low WSS. However, high WSS were observed in
stenosed region.

CONCLUSIONS
(1) Changes of flow velocity and the appearance of turbulence flow are
related to atherosclerosis.
(2) Low WSS is related to the formation of atherosclerosis.
(3) High velocity , Low WP and high WSS are related to the rupture of
atherosclerosis plaques.
(4) MRA-based CFD provides an effective method to obtain accurate
visualized hemodynamics parameters.

GW26-e4465
Internet-Based Approach in the Control of Hypertension among
Working Adults Using Mixed Quantitative-Qualitative Methods: A Case of
Non-Medical University Teachers
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OBJECTIVES This study developed a nurse and physician directed
hypertension control programme using information technology,
which helps to shift towards a more appropriate individualized in-
terventions on lifestyle amongst non-medical universities teachers
with hypertension.

METHODS This study used a mixed method approach, with an inte-
gration of quantitative and qualitative research. The study was
sequential; the qualitative phase was followed by the quantitative
phase.

RESULTS In the qualitative study: 1) fearless of health changes
as a result of without any awareness of hypertension; 2) con-
fused with meaning of blood pressure control and getting angry;
3) seek to help from others; 4) focus on the health changes with
actions.

In the quantitative study during the intervention, 24SDP signifi-
cantly decreased by 2.98 mmHg 3 months later and 3.78 mmHg 6
months later, as compared with 24SDP before interventions (p =
0.029);
1) 24DBP significantly decreased by 3.18 mmHg and 4.02 mmHg for 3
months and 6 months later respectively than that before interventions
(p = 0.035); 2) BMI did not statistically significantly decline after 3 months’ in-
terventions (0.76 kg/m²), whilst it decreased by 1.49 kg/m² at the end
of interventions ( p = 0.033); 3) In terms of blood lipid and lipoprotein, HDL increased by
0.03 mmol/L at the end of interventions ( p = 0.997); TC declined by
0.27 mmol/L and 0.61 mmol/L for 3 months and 6 months later
respectively than that before interventions (p < 0.001); TG lowered by
0.28 mmol/L 3 months later and 0.33 mmol/L 6 months later
compared to that before interventions ( p = 0.019); LDL decreased

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