

THINKING AND METHODOLOGY

RT-ABCDE Strategy for Management and Prevention of Human Diseases

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ABSTRACT In this article, the authors summarized the RT-ABCDE strategy for the management and prevention of human diseases, which includes ReTro—ABCDE (Examination regularity, Disease and risk factor control, Changing lifestyle and reducing pathways of infection and spread, Biochemical and Antagonistic index control and therapeutic treatment as well as RT – Routine and Right Treatment). The RT-ABCDE strategy, a novel concept and an essential method, should be a routine strategy for disease control and prevention. It should be proposed and applied in both clinical and preventive medicine.

KEY WORDS human disease, management, prevention, RT-ABCDE strategy

Since severe acute respiratory syndrome (SARS) broke out in early 2003 and chronic diseases have become the greatest cause of death in the world (now at least 29 million people have died worldwide)⁽¹⁾, people have become more conscious about the importance of the prevention and management of acute and chronic diseases. At present, along with the wide spread of lifestyle diseases such as tumors, cerebrovascular and cardiovascular diseases, diabetes mellitus, obesity, gastrointestinal diseases, as well as four infectious diseases (tuberculosis, hepatitis B, AIDS and schistosomiasis) and allied health issues, it has become more urgent to use more effective strategies in controlling human diseases. In this article, the RT-ABCDE strategy, a novel concept combining Right Treatment and ReTro—ABCDE strategy for the management and prevention of human diseases, is clarified. Just as in RT-PCR, it is anticipated that this strategy will be beneficial for acute and chronic disease control, resulting in a more effective health management. It is believed that as a routine and as a correct strategy for disease control and prevention, RT-ABCDE will produce far-reaching effects in the field of clinical and preventive medicine.

Examination Regularity

Entering the 21st century, significant changes have taken place in the spectrum of human diseases. The morbidity and mortality of some chronic diseases, such as cardiovascular diseases, cancer and chronic respiratory diseases, are significantly trending upwards in increasingly younger patients⁽¹⁻³⁾. Individual- or group-examination regularity is an important means that is helpful in the early discovery, early diagnosis and early treatment of diseases. Therefore, examination regularity should start at a younger age (before age of 30 years). At present, there are many large centers for physical examinations in big cities all

over the world. There are also departments of physical examination in large-scale hospitals. Regular examinations, including detailed physical examination and relatively auxiliary examinations [laboratory tests and device examinations, including three routines, blood biochemistry, blood lipid, blood glucose, X-ray, ultrasound B, electrocardiography, computer tomography (CT), magnetic resonance imaging (MRI) and single-photon emission CT (SPECT)], should be conducted by experienced doctors to make a more effective health evaluation, which is very essential for the management and prevention of chronic diseases⁽⁴⁾ and for health management and education. Usually, a regular examination should be conducted once per year and reexaminations should be conducted in those with abnormalities once every 6 months or 3 months or even once a month. Annual physical examination in every unit and physical examinations for the new staff and new students are a very good routine examination opportunities with no difference in age or gender. A general survey is also an examination regularity that covers a wider range of population and is usually conducted once every 3 to 5 years or even 10 years. Special examinations for females, such as breast and gynecological examinations may be helpful in finding common tumors early, including breast cancer and cervical cancer. Routine prenatal screening can effectively decrease the occurrence of congenital heart diseases⁽⁵⁾. Regular examination will also be helpful for the early discovery of related cardiovascular diseases such as congenital heart diseases, hypertension, myocardial ischemia and potential risk factors such as hyperlipidemia, hyperglycemia, overweight and low vitamin levels, etc⁽⁶⁻⁸⁾, benefiting the primary and secondary prevention of the disease in the early stage⁽⁹⁻¹¹⁾.

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Regular examination embodies the fact that prevention is the best strategy for the treatment of human diseases.

Disease and Risk Factor Control

Many serious malignant and critical diseases such as cancers or malignant tumors, serious cardiovascular diseases (apoplexy, acute myocardial infarction, acute heart failure and severe hypertension), renal dysfunction, complications in diabetes mellitus and multiple organ system failure (MOSF), from the mild state, progress to pathological changes. Risk factors such as high blood pressure, high blood sugar and obesity are the bases for cardiovascular and cerebrovascular diseases (CCVD). Precancerous lesions such as ulcer, fibrosis, polyps and mucosal lesions are risk factors for malignant tumors. Inflammation and immunological changes such as SARS are the basis of MOSF. Mild diseases may progress to serious diseases. Hence, early treatment and intervention of the primary diseases, to prevent further development and complications, is an important measure for hindering the diseases from developing into an irreversible stage. The secondary prevention of various diseases is likened to mending the fence after the first sheep is lost. Just as people pay more extensive attention to the secondary prevention of coronary heart disease (CHD), prevention is the best treatment⁽¹¹⁾. Results of recent studies show that controlling primary disease and risk factors is an important strategy for reducing the burden on the family and society in China due to early death in adults⁽²⁾.

Changing Lifestyle and Reducing Pathways of Infection and Spread

Except congenital diseases, acquired diseases are closely associated with the individual or group lifestyle. More than 70% of chronic diseases are related to diet. Even the congenital diseases such as CHD are closely related to poor habits of parents and the living environment. Long-term stress, heavy psychological pressure, smoking, alcoholism, lack of sleep, "three-high" diet (hyperlipidemia, high sugar and high calories), lack of exercise and irregular lifestyle are important causes for tumors, cardiovascular and cerebrovascular disease, diabetes mellitus, obesity, gastro-enteropathy and poor health, etc.^(12,13) Lifestyle has become a new therapeutic target of CCVD. Therefore, changing lifestyle by following "Zhongzi" (S-E-E-D: sleep, emotion, exercise and diet) rules for health is very important and necessary for the management and prevention of lifestyle-related diseases. Studies show that lifestyle intervention such as cessation of smoking, increasing physical activity and improving nutrition can decrease morbidity and mortality of cancer and CCVD^(2, 9-11). At the same time, it can lower blood lipid, control blood pressure and decrease blood sugar⁽¹⁴⁻¹⁶⁾ and, eventually, improve the quality of life (QOL) greatly.

As for the infectious diseases, it is necessary to reduce infection and spread of infection and the metastasis of cancer cells and to take active measures to isolate patients. In the simplest examples: washing hands can greatly decrease the bird-flu morbidity induced by infectious diseases such as the common flu and the avian flu. The use of masks can prevent infection from the SARS virus.

Biochemical and Physiologic Index Control

Biochemical indices such as routine blood and urinary tests, blood lipid, blood sugar, hepatic and renal functions, blood viscosity, as well as regular physiologic indices such as temperature, pulse, respiration, blood pressure, heart rate, body weight index, waist-hip ratio (WHR), electrocardiogram, electroencephalogram and pulmonary function tests all reflect whether the physiological function of the organism is normal or in the pathologic state. Some special physiologic indices such as finger length^(17,18), low birth weight⁽¹⁹⁻²⁰⁾ and skin lines (fingerprint) are closely associated with congenital diseases and acquired cardiovascular diseases in adults. Special biochemical indices such as brain natriuretic peptide^(21, 22), carbohydrate antigens 125, C-reactive protein, cardiac troponin I, carcinoembryonic antigen, alpha fetoprotein, cytokines, inflammatory mediators, the four markers for tumor diagnosis, the activity of drug metabolism enzymes (DME) and hereditary or genetic polymorphism all play an important role in diagnosing, prognosticating and preventing related diseases. The objectives of the clinical treatment are as follows: (1) to keep biochemical and physiologic indices within the normal range and to sustain homeostasis; (2) to correct the abnormal biochemical and physiological index, (3) and to achieve a clinical cure. In addition, as for the congenital or genetic indices, early lifestyle intervention may prevent or decrease the possibility of the expression of genetic diseases.

Treatment Antagonistic

After confirming the diagnosis of acute and chronic diseases, an effective therapeutic treatment will follow, which includes Western medicine and Chinese herbs [i.e., Danshen Drop Drills (丹参滴丸) and Artemisinin Qinhaosu], non-drug therapy, surgical operations or interventional therapy [i.e., anti-tumor therapy (including surgical resection, radiotherapy, chemotherapy or interventional embolism)], anti-hypertension treatment [for which seven core principles should be followed seven core principles (SeCP)]⁽²³⁾, the treatment of chronic heart failure (CHF, including six kinds of biomedical engineering therapy)⁽²⁴⁾, reconstructive treatment [such as percutaneous intervention, coronary artery bypass grafting, valve replacement, atrial or ventricular septal defect operation and microsurgery (such as re-attachment of amputated fingers)], destructive

therapy (such as radiofrequency catheter ablation, splenectomy, subtotal gastrectomy, total resection of the uterus, etc.), and anti-inflammatories, anti-clotting, anti-thrombin, anti-embolic, cardiopulmonary resuscitation (CPR) and brain resuscitation (recently reverse CPR⁽²⁵⁾), anti-oxidative stress, anti-apoptosis, anti-aging as well as psychological intervention⁽²⁶⁾. Therapeutic treatment, as the major measure for the treatment of human diseases, should be given as early as possible. A lot of new techniques and novel methods are being developed and under clinical trials. Therefore, right treatment is very important to save a patient's life. Doctors should select rational and scientific strategies of mono-therapy and/or combination therapy, including invasive and non-invasive measures as mentioned above to support, supplement or substitute the abnormal and insufficient function of human organs in diseases.

Along with the rapid progress of medical science and technology, various new treatment methods and strategies appear. Great successes have been achieved in modern medicine marked by minimally invasive surgery⁽²⁶⁾ and regenerative medicine including gene therapy, molecular cloning, stem cell transplantation and tissue engineering^(27,28), all of which have become "hot" fields in biomedical science in the 21st century. As gene therapy should follow the "3Y" principle⁽²⁹⁾, in clinical practice, the "3Y" principle also needs to be emphasized to better enforce the RT-ABCDE strategy for the management and prevention of human diseases. The RT-ABCDE strategy and SeCP-based synthetic program for hypertension are updated methods and are worthy of promotion for clinical practice. At the same time, both clinical and basic research scientists agree that it is very important to integrate the clinical sciences with public health. It is necessary to further understand the mechanisms for some diseases such as cardiovascular diseases, diabetes mellitus^(31,32), cancer and infectious diseases. On the other hand, it is time for health policy makers to consider the RT-ABCDE strategy as an essential and routine method for use in clinical and preventive medicine.

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