
Computers in Family Practice

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A Computer Program for International Travel Advice

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Americans are traveling abroad in record numbers. Each year, US citizens make 6 million trips to the "tropics" and 3 million trips to Mexico. Only a small fraction of these travelers, however, obtains accurate health advice to prepare for the many diseases and health hazards likely to be encountered abroad.

Family physicians are the source most frequently consulted by travelers for advice about health precautions and immunizations for international travel.¹ These recommendations fall into two categories: those that are required for entry into a country and those that are optional but in the best health interests of the patient. The former are set by regulation in each country and do not vary from traveler to traveler. The latter are discretionary

and depend on such factors as type of travel, length of travel, and the traveler's personal medical history; only the traveler's physician can properly give such advice.

Yet few physicians receive any training in the field of emporiatrics (travel medicine). There are over 200 countries in the world, each with its own set of unique entry requirements and its own set of diseases and health hazards for the traveler. This vast array of information is constantly changing; new disease outbreaks occur regularly, old disease patterns change, and entry requirements may alter.

Although there are numerous books and pamphlets on this subject, all suffer from the limitations imposed by rapid changes in information. What was relevant the day the manuscript was complete may be entirely different months later when the book is published, or years later when the book is read in the physician's office.

Both the Centers for Disease Control (CDC) and the World Health Organization (WHO) publish yearly, biweekly (CDC), and weekly (WHO) pamphlets to alert public health officials, physicians, and travel agents of significant issues in international health. Yet maintaining this data

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base is a cumbersome chore. (In 1983, for example, a physician would have had to keep track of nearly 50 changes in the CDC recommendations.) Each travel itinerary must be checked and cross-checked against various publications.

In fact, very few physicians subscribe to these publications. Many give their patients inadequate advice,^{1,2} or they simply refer them to local public health offices that may maintain the same outdated information. Furthermore, referral is unsatisfactory because patients must still return to the physician to be administered the necessary shots, receive prescriptions for antimalarial medication, and discuss optional recommendations. For example, a traveler planning to spend three months abroad visiting local villages in underdeveloped areas might wish to consider polio, measles, typhoid, Japanese B encephalitis, or rabies protection. None of these is "required" by any country but might well be in the best interest of the patient. How can a physician keep up to date with this vast amount of constantly changing information?

A Solution

This challenge presents a generic problem in information management and organization. Ideally, a large body of information (health conditions in 217 countries) would be entered into a computer and retrieved as needed. The master program would be updated quickly and sent to subscribers as often as needed, assuring accuracy.

Such a program has been created. IMMUNIZATION ALERT,* written in BASIC for the IBM-PC and TRS-80 Model III/4 computers, has been in use since 1981. It occupies about 32K of memory and offers the following features: (1) individual reports for any number of countries with comprehensive summary (Figure 1), (2) a complete data base printout of all 217 countries, (3) display of each country on a video screen for rapid review, and (4) updated information as world con-

ditions change, processed in only a few minutes each week.

The System in Operation

During 1983 this system was used in a three-physician family practice and a large university family practice outpatient clinic. One hundred sixty-three patients requested advice about their travel to non-European countries. Seventy-eight visited only one country. For those visiting more than one country, an average of four countries was visited. The countries were distributed as follows: Africa 16 percent, Asia 56 percent, Oceania 5 percent, South America 14 percent, and Central America 9 percent.

Individual reports were prepared for each traveler beforehand and discussed at some length during an office visit. Special attention was paid to specific health hazards for each trip as well as to general considerations applicable to travel to any country. Protective inoculations for cholera, typhoid, hepatitis B, polio, and Japanese B encephalitis (by agreement with the CDC, under Federal Drug Administration Investigational New Drug protocol), as well as gamma globulin, were given as indicated. Other general subjects such as avoidance of mosquitoes, fresh water hazards, food preparation, and prevention of diarrheal disease were also discussed. As each traveler's itinerary and personal medical history is unique, no single set of recommendations will suffice.

Physicians spent no time researching each itinerary, as the prepared report contained all necessary information. This resource has proven to be a great time-saver, allowing more opportunity for discussion with the patient, an obvious advantage. Past experience required at least 10 to 20 minutes of physician time to review CDC publications and coordinate information about travel among many countries so that accurate recommendations for each traveler could be prepared. The computer-generated reports contained all CDC advice and were therefore as complete and accurate as could be reasonably expected.

A computer-generated data base of information from the Centers for Disease Control for interna-

*Information is available by writing to IMMUNIZATION ALERT, PO Box 406, Storrs, CT 06268.

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TRAVEL PLANS AND IMMUNIZATION ADVICE FOR

John and Jane Traveler
Main Street
Any Town USA

UNION OF SOVIET SOCIALIST REPUBLICS

CHOLERA: This immunization is NOT REQUIRED for entry into this country.

YELLOW FEVER: This immunization is NOT REQUIRED for entry into this country.
-- Yellow fever certificate is valid for 10 years.

MALARIA AND OTHER COMMENTS:

- Malaria is present in this country. Consider preventive therapy.
- Malaria risk is present in a few scattered border areas with Iran and Afghanistan.
- Tickborne encephalitis may be a problem for those visiting or working in forested areas, or for those who consume unpasteurized dairy products. Avoid tick bites (repellents with DEET are useful) if you will be travelling in these areas.
- A few cases of Shigella (dysentery) were reported in American travelers to these areas in 1983: Uzbek, Georgia, Armenia and Azerbaïdhan.
- Travelers to this country may be at risk for Japanese Encephalitis, a mosquito-borne viral encephalitis. Travelers at risk include those who will be in rural areas of the country for more than 3 weeks, during June-Oct. See brochure for comments on avoiding mosquito bites.

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*** SUMMARY ***

CONSIDER MALARIA PREVENTION WITH CHLOROQUINE

When traveling in countries with POOR SANITATION OR HYGIENE consider immunization against POLIO (oral polio vaccine--OPV), TYPHOID and HEPATITIS (gamma globulin)

These recommendations only apply to U.S. citizens.

Citizens of other countries must check with their embassies for additional documentation.

Discuss these recommendations with your physician who will consider them in light of your personal health history and specific needs.

This advice follows the format of the U.S. Department of Health and Human Services, Centers for Disease Control as published in

Health Information for International Travel. These recommendations are current as of the Weekly Summary of 14 September 1984

Address all inquiries to: IMMUNIZATION ALERT!, PO BOX 406, STORRS, CT 06268 (c) 1983 Immunization Alert

Figure 1. Reproduction of a sample printout of travel and immunization advice for the USSR (reproduced with permission from IMMUNIZATION ALERT)

tional travelers provides an accurate and reliable way to advise patients who travel. Use of the computer saves physician time in preparing advice for patients who travel.

References

1. Catino D, Catino JS: Malaria prophylaxis among American travelers. JAMA 1982; 248:2111-2112
2. Reilly PC, Reilly MC, Catino JS, et al: High risk travel and malaria. N Engl J Med 1977; 296:1536