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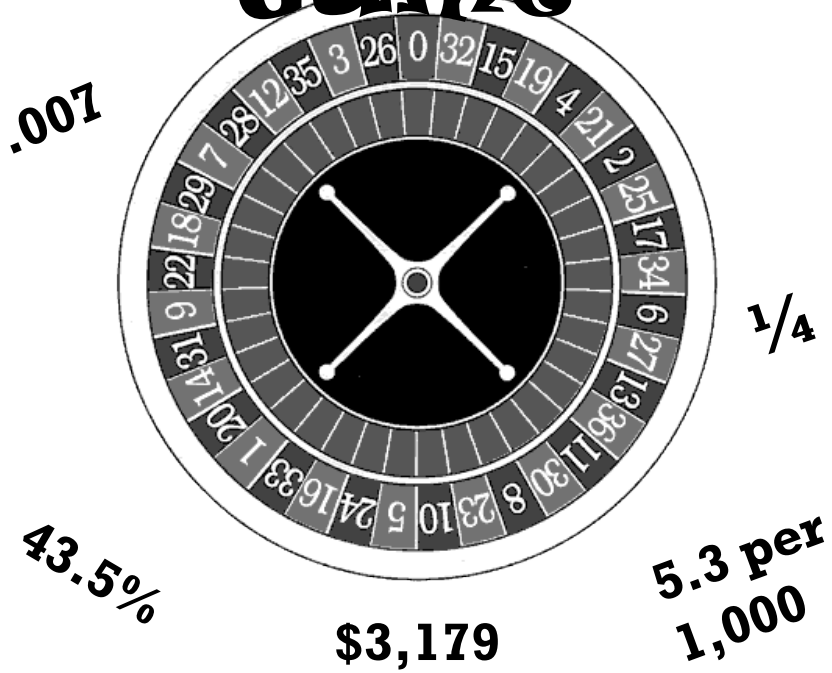
Playing the Numbers Game



Francis X. Hezel, SJ

What Used to Work

"How many fish did you catch last night?" someone asks. "Plenty" is the answer. "And how big were they?" the questioner asks. So the young man extends his arm and marks off a part with his other hand to show his interrogator the length of the biggest fish he caught.

"How far is it to the nearest store?" someone inquires. "Go, go, go and then turn at the cottonwood tree," is the reply. The driver, an American, scratches his head and wonders just how far "go, go, go" might mean. He is hard-pressed to convert this expression into miles or yards.

These conventional island responses would have satisfied people engaged in casual conversation once upon a time, but they don't work any longer today. At least not when the conversation is with the person who is paying for the gas used in the fishing boat, or with the man who is trying to deliver supplies to that village store. Yet, all too often we continue to use such vague measures in addressing the request for information from overseas funders.

The old navigators had stars to steer by when making a voyage, and they knew the names of the stars and the islands that lie beneath them off the horizon somewhere. What do we use to steer by?

The conversation today is between island governments and those nations or organizations that fund them. We know that these outside interests expect something more specific, but they all too often receive no more than vague replies. The truth is, however, that we need this information ourselves to steer us in our work and to ensure that we're putting our energies into the right programs. The old navigators had

New Video

www.micsem.org

Island Topic 65

"Dreaded Flu"

Dark days have come over an island. The population suffers from a plague that brings just about everything to a standstill. Government offices and schools are shut down, and even stores are forced to cut back as their employees and customers fall ill. The sneezing and coughing, the chills at night, the listlessness are all signs that the dreaded flu has struck. Only one person seems immune to the malaise that has swept the island-a man who has been immunized the year before. When one of the townspeople does some research and finds a way to bring in vaccine, the population is at last delivered from darkness. The same blessings can be ours, the drama suggests to us, if we are inoculated against the flu.

Schools Web Page

Elementary School's Web Page in Palau, Marshall Islands and FSM. Visit our website, www.micsem.org.

Help! We want to continuously update our school's web page. Can you help by sending us photos and some more information about those schools mentioned above? (if you have it.)The Micsem staff person on this project is Eugenia Samuel. You can email her at *euke@micsem.org*.

even greater in health services. If we try to derive prevalence rates for diabetes from the patients who come to the hospital for treatment, we are likely to end up with a biased sample that exaggerates the overall rate in the general population. Likewise, if we ask sixth-graders directly whether they have smoked cigarettes in the last month, will they tell us the truth or embroider it to make themselves look more experienced than they really are?

Once we have the data we need to indicate how our programs are going, let's not get too nervous about releasing it to the public. This data does no good if it stays in the bottom drawer in someone's desk. Government employees often treat their data as though it were the family jewels. They keep it out of sight to protect it from being stolen or misused. The long delays I recently had to put up with while education department employees sought permission to release the test score results are discouraging. The public here in the islands deserves to know what's happening to the students it's sending off for an education. So does the US, which is providing most of the funding for our education system.

Only by working together–public servants and the people they serve–can we hope to take a clear look at our education and health systems, make a sound judgment on their effectiveness, chart the problem areas, and determine what needs improvement and how we should go about it. This is our best chance of making any real progress in years to come, and progress is what we all want–the people here, those working in health and education, and the US government that is funding their work.

To do this, we're going to have to use more accurate measures than "somewhat" or "plenty." Welcome to the Western world where numbers rule!

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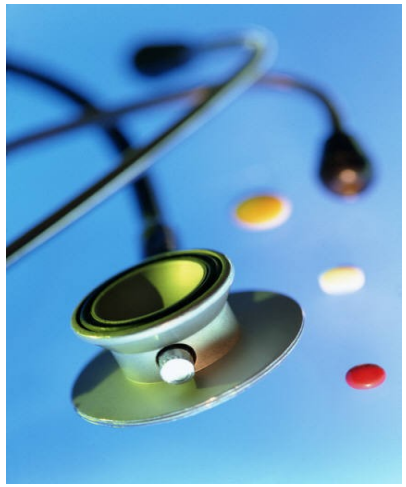
Gauging Health Problems

Before we can put our resources and energy to best use we have to know what the biggest problems are. Take health as an example. What are the most serious health problems in the islands today?



The ocean is wide and we have flickering stars everywhere we look. Drive a few hundred years down the main road of any town and you're sure to find billboards or banners directing our attention in dozens of different directions. *It's Mental Health Week. Fight cervical cancer. Stamp out TB. Eat local. Get your flu shot. Immunize your children before they start school. Brush your teeth after you eat....* We're bombarded with health messages. But where do we start? Which is more important than what? Or do we take all signs and banners that we pass on the street to be of equal importance, shrugging at them all before we move on? The conscientious adult might try to absorb all these messages and communicate them to the family. But where does that leave health planners, those entrusted with the responsibility of assigning priorities to health services?

Once upon a time, in the years following World War II, the top health threat in the islands was respiratory disease, especially TB. Fifty years before that, the big killers in the islands were simple infectious diseases like influenza and measles. But where does the biggest danger lie today?

All you have to do is check out the size of adult bodies in stores, gas stations, movie theaters or video rental places. It's clear that our people are overfed and under exercised. So, medics and health educators are telling us to watch out for non-communicable diseases (NCDs)–things like diabetes, and heart disease and stroke. When we flip through the old photos of island people in the days before they wore trousers and shirts or full dresses, we may notice with some surprise–and admiration–that they seemed robust and most had very little body fat. So, when someone tells us that obesity puts us at higher risk for these diseases, we nod sagely and begin to consider the danger of NCDs. We have impressions based on contrasts between body condition then and now, and we have the advice of health professionals. In other words, we have street smarts and plenty of anecdotes to draw on. Even so, can we prove that NCDs are the biggest health threat today? Do we have any numbers that will help us chart our course and determine our health priorities?

It was easier to find out how many people had died of the smallpox epidemic on Pohnpei a century and a half ago than to get accurate figures on how many islanders had died of NCDs during the past year or two.

I spent the last three weeks working on an article on the history of disease in Micronesia that I hope to see published soon. Oddly enough, it was easier to find out how many people had died of the smallpox epidemic on Pohnpei a century and a half ago than to get accurate figures on how many islanders had died of NCDs during the past year or two. The best I could do was to find numbers of deaths caused by the Big Three (diabetes, heart disease and stroke) 15 to 20 years ago. The only reason I was able to find even these dated numbers is that Dr. Joe Flear had taken the trouble to go through the death certificates of several different island groups. Isn't it time for updated figures, if we truly believe that these diseases pose the greatest health threat to our

these must claim our immediate attention if we want to improve educational results.

Recording Numbers

Computers are the answer, many of us once thought. Then we found that computerizing data did not generate the numbers we needed. In fact, sometimes it created even more difficulties. Two years ago, when we were surveying the data flow on education in FSM, we found ourselves in the middle of what I call the information system wars. Two of the states were using a system developed by a PREL consultant, while another system, designed by ADB, was being used by the other states and national government. As if this wasn't enough, a further bit of software was introduced to facilitate reporting from the elementary schools. The result was a hodgepodge of data, some of it helpful and some of it utterly useless.

But even apart from the software wars, let's keep in mind that computers only record the data that someone inputs. Unless we can count on the schools and dispensaries to provide a steady flow of information, we'll never have the data we need to track our progress in education and health. Monthly reports containing relevant information are indispensable. We may have to do a little better than we are at present in offering incentives for reporting and in imposing sanctions for failure to do so. The reporting system depends on strong links with the people in the villages who are responsible for health and education work.

The data collected must be relevant and accurate. Who cares how many tables and chairs there are in the school cafeteria (although this information is being recorded in one of the systems)! We don't need to know how many security guards are employed at the hospital. What we do need to know is any information that may have a real effect on the results of our health and education system. But the information must be accurate; it must reflect what is truly happening. If we can't trust teacher attendance rates supplied by the schools, then we can't even begin to deal with the absenteeism that may be one of our biggest educational obstacles. But the problem of accurate data is probably

Besides their teacher, students also need learning materials: a chalkboard or whiteboard, textbooks, reference materials, and so forth. Because of the obvious shortage of textbooks in the classroom, US funds were made available to FSM to purchase textbooks for the schools. After this, the ratio of textbooks to students was counted and added to the 20 indicators that FSM Education Department uses to measure progress. There's certainly nothing wrong with that, but it might be helpful to consider other factors as well.

The condition of the school building and the status of the land that it occupies can also have an impact on the quality of education. If the roof of the classroom building leaks, for example, school my be cancelled whenever there is a heavy rain. On the other hand, if the water catchment is poor and there is no water for drinking or sanitation purposes, school might also be shut down. Then, too, if the school has been built on leased land, the landowners might lock out teachers and

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Once we have the data we need to indicate how our programs are going, let's not get too nervous about releasing it to the public. This data does no good if it stays in the bottom drawer in someone's desk.

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students while demanding a larger lease sum of the government. This type of thing, which has happened repeatedly in Chuuk and Pohnpei, can be prevented by ensuring that the land is secure. All of these factors can have an impact on how well the school operates, and ultimately on how much students learn during their years of schooling.

At bottom, we would do well to record real, not fictitious, data on how many days during the school year the school was holding class (not preparing for a track meet, holding a Christmas party for teachers, or dismissing students after morning assembly). If the condition of the school or the status of the land results in classes being called off, then

populations today? Must this be hidden away in death certificates until some determined researcher tracks down the data and makes charts for us?

At least we can provide one answer for the question "How much damage do NCDs do to our people?" We can show them the following table for the causes of death during the early 1990s. The table tells us that 46% of the deaths during those six years were due to diabetes, heart disease and stroke. That number can help us make a convincing case when we are speaking to our people about the dangers of NCDs or in justifying the funds for a campaign against the NCDs. There may be difficulties with the figures; they may be dated, and perhaps there are better ways of calculating the damage that NCDs do; but at least we don't have to answer the question by shrugging our shoulders or replying "Oh, they do plenty of damage."

Table 1: Major Causes of Death, by percentage, 1991-1996

	Yap	Kos	Chuuk	Pohn	RMI	All Islands
Diabetes	6	24	9	7	18	13
Heart	12	20	26	30	14	24
Stroke	10	12	7	11	7	9
Total	***28***	***56***	***42***	***48***	***39***	***46***

[Note: Figures for Yap include 1991-1995 only; figures for Marshalls include 1994-1997. No data for Palau available. Joseph Flear, Summary of the Health Priority Seminars, 1998]

Weight as a Contributing Factor

NCDs didn't instantaneously appear in the islands like a sudden epidemic. They were growing all the while, especially during the 1960s and 1970s, the age of new prosperity in the islands, thanks to the increase in cash and the rise of imported foods and the ease of transportation. We might dismiss all this as simply more street talk and rough impressions, but there are numbers to provide some support for

the statement. The Trust Territory Annual Reports during this period record a growing number of visits to hospitals and dispensaries for treatment of diabetes and heart disease (See Table 2). There's no doubt at all that the cash flow from the US was rapidly increasing during those same years. We may not be able to prove that there was a causal link between the money and the health problems, but the numbers certainly suggest the possibility of such a link.

Table 2: Treatment in TT Hospitals and Dispensaries for Diabetes and Heart and Circulatory Disease, 1956-1976

	Diabetes	Heart Disease
1956	8	192
1966	280	1,082
1976	522	1,494

[Note: Data taken from TT Annual Reports for 1956, 1966, and 1976]

Physicians and health educators point out that obesity is one of the most important factors in the rise of NCDs. Being overweight taxes the heart and circulatory system and puts people at greater risk of heart disease and stroke, while it also increases the possibility of high blood sugar rates. We do not need to prove any of this with numbers, since medical studies throughout the world have already established such links. What we could profitably do, however, is to determine where the islands stand by comparison with other parts of the world. Dr. Steve Auerbach, an epidemiologist stationed in FSM 15 years ago, did a sample survey of three states to establish the rates of obesity in these places.

to find results of the NST for each elementary school, but we still don't have them. Perhaps administrators are shy about revealing the numbers for fear that these figures will discredit their own work. In any case, the numbers alone aren't going to help us much unless the public has access to them.

Contributing Factors

If we are unhappy with the results of the education process and if we would like to improve the learning outcomes, how should we go about this? Clearly, we should look at some of the factors that might affect the quality of education our children get. We might begin by considering these, not forgetting to collect numbers along the way.

Perhaps the most important element in education is the teachers. Immediately, of course, everyone's thoughts turn to the question of whether the teachers in our schools are qualified. Since most people presume that qualifications are gauged by whether or not teachers have their college degree certification, it's easy to find data on the number of teachers with formal certification. What we may fail to take into account, however, is that in the final analysis motivation may be more important than training. No matter how well trained a teacher is, he will be of no use if he's not in the classroom with his students. It stands to reason, then, that teacher absenteeism could be extremely important in determining how good or bad an education students receive. But where can we go to find the teacher absenteeism rate for different schools? Certainly not to the education department, which publishes whatever the school principals offer them. This results in the publication of fanciful rates of teacher attendance (usually 97-99%). It also means that one valuable bit of data we might have had to help us assess our school system is thoroughly useless.

especially for island schools, MAT offered us scores that would allow us to make the same kind of judgment on the success of students (and the performance of the school they attended).

Unless, we can count on the schools and dispensaries to provide a steady flow of information, we'll never have the data we need to track our progress in education and health.

Elementary schools may not have had an equivalent of CAT, but their eighth-grade students took a high school entrance exam that offered one way of gauging the quality of education in the school. Each year the district education department would compute the percentage of students who passed the test in each school, afterwards announcing the results on the radio. People might not have known just how much math or English students in their school had mastered, but they certainly knew which schools in their district had the highest pass rates on the high school entrance test–and which had the lowest.

What do we have today? The Marshall Islands has instituted a PILLS test that it offers to all elementary school students; afterwards, the average score for each school is published, just as was done in the Trust Territory days. Palau has been using its own Palau Achievement Test (PAT) to measure both elementary and high school students. FSM has its National Standards Test (NST) which will soon include high school as well as elementary students. Now that high schools just about everywhere have expanded so that nearly anyone who wishes can attend, the old high school entrance tests no longer have the same importance they once had. But at least we have other tests that can measure outcomes in elementary and high school students.

The numbers are there, but people in FSM at least will have to dig hard in order to find them. For more than six months I've been trying

Table 3: Percentage of the Population Overweight, 1994

Age Group	**Kosr**	**Chk**	**Pohn**	**USA**
35-44 yrs	78	80	84	36
45-54 yrs	84	79	84	39
55-64 yrs	79	68	71	44
65-74 yrs	59	53	67	41

What we see here is that over 80% of the Micronesians surveyed in the first two age groups (ie, between the ages of 35 and 54) were overweight, more than the percentage of Americans of the same age. This figure should serve as a warning that unless the problem of obesity is reduced, we can expect the number of people suffering from NCDs to continue at its present rate or even increase. Dr. Auerbach tested his sample group for high blood sugar (a measure of diabetes) and high blood pressure (a precursor of heart disease or stroke). He found that the Micronesian population aged 35-54 had a rate of diabetes that was two or three times greater than Americans in that same age group, and that the hypertension rate among islanders was 50% higher than in Americans.

We seem to ignore what we know about island practice, instead slavishly imitating what are touted as "best practices" in the US.

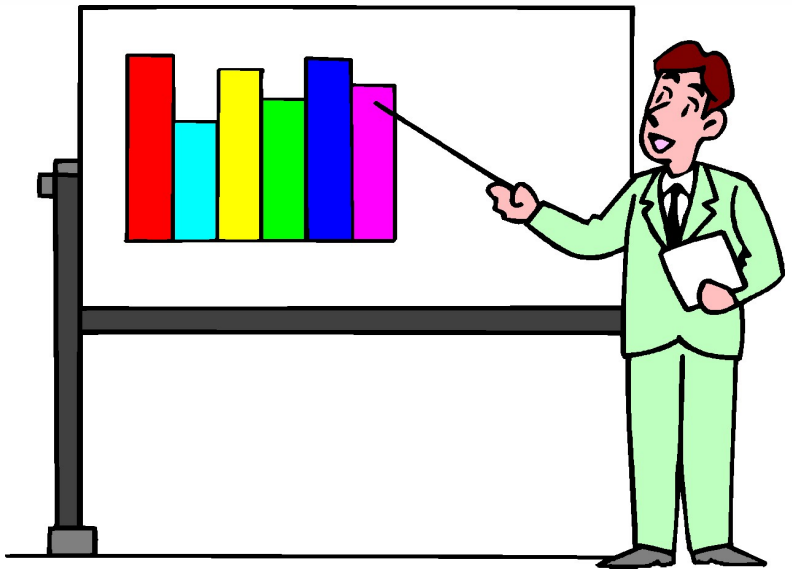
So, we have data to show that a much higher percentage of islanders seem to be suffering from the major NCDs than Americans. The only problem is that the data is 15 years old. Isn't it time that we conducted another survey to find out how much the diabetes and hypertension rates have grown or decreased since then?

The Tobacco Problem

Tobacco use, whether it is smoked or chewed, can lead to cancer, as we all know from the warnings on cigarette pack wrappings. But tobacco use can also contribute to hypertension and the heart disease that it so often brings on, as numerous medical studies demonstrate. If tobacco use poses such a threat to the health of the population, especially in the contribution it makes to NCDs, it would make sense for health services to wage war on tobacco. Indeed, precisely because tobacco use is widely understood to be a serious health threat, tens of thousands of dollars each year pour into the islands to control the spread of tobacco use. The program money has as its main target the young. This makes sense, since older smokers may be too well entrenched in their practice to be reached anyway. Thus, the campaign is launched to limit the spread of tobacco use among the young. The money is used in large part by trying to get to the kids to stop them from using tobacco before they start.

If we know that most of the young tobacco users are betelnut chewers rather than smokers, we might decide that it makes more sense to ban the sale of individual cigarettes.

So far so good. But then we seem to ignore what we know about island practice, instead slavishly imitating what are touted as "best practices" in the US. These include enacting legislation against selling tobacco to minors (anyone under the age of 18), and installing a hot-line for those who want to quit smoking. The hot-line might be a good idea in a country as big as the US, but I wonder how successful it could be in a small community where anonymity is hard to come by. After all, the point of the hot-line is that the person who calls in for help and the one at the other end of the line are not supposed to be known to one another. On Pohnpei the hotline reportedly generated a total of only 13 calls over two years. Do we have any evidence that the hot-line is working any better in other islands? Shouldn't we be able to cite numbers to help us answer that question?



Turning to Education

Education is another major public service where we find a tangle of data, the essential and the not so important. There are tallies of the number of computers in the public school classrooms, the numbers of teachers with full certification, the number of buildings renovated, and much more. All of this is nice, but does it really tell us what we want to know: how much are students learning? After all, the fundamental purpose of schools is to educate the young. Consequently, the basic question is how much have students leaned after eight years of elementary school, and after four years of high school.

Once upon a time, back in the late 1960s and early 1970s, this question could be answered in a straightforward way. In those days, most high school seniors took the California Achievement Test (CAT). All we had to do to gauge the performance of the schools was to compute the average CAT score of the senior class, or calculate the percentage of seniors accepted into college. This wasn't an infallible method, of course, but at least it gave us some way of assessing the quality of the students and the school they were attending. Then, in the 1970s, the TT Education Department developed a different test to replace CAT–the Micronesian Achievement Test (MAT). Designed

Summing Up

•Find out what the most important problems are (numbers, not just impressions) and deal with these first.

•Use common sense and research to decide on strategies to deal with these critical problems. We know that obesity is linked with heart disease and diabetes, but the best strategies for dealing with the problem are not necessarily those recommended by Washington or Atlanta (e.g., hotlines and laws prohibiting the sale of tobacco to minors). Here is where we ought to let practical wisdom guide us.

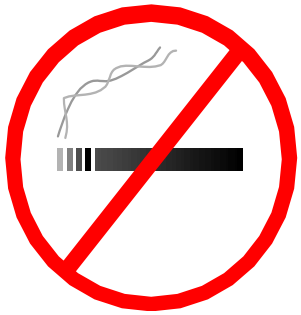
People might not have known just how much math or English students in their school had mastered, but they certainly knew which schools in their district had the highest pass rates on the high school entrance test and which had the lowest.

•Protection measures–like childhood immunization and dental sealants–are easy ways to avoid health problems in the future. Why not build them into our public health programs, while being sure to tabulate the results?

•Less serious health problems, like HIV and TB, may be addressed, but they should be kept in perspective. Campaigns can be mounted against them, provided that they do not tie up resources that might have been used for doing more important things.

•In general, the more numbers you have to support your decisions, the better. Pick your goals carefully and record the results.

Another US-initiated practice that has been widely recommended for Micronesia is legislation forbidding the sale of tobacco products to minors. Indeed, the legislation has been enacted nearly everywhere in Micronesia. How about the enforcement, though? Admittedly, in some places there have been attempts to monitor the sales of tobacco and punish those who break the law. But let's look at the realities of island life. When dad runs out of smokes, he sends his young son to the mom-and-pop store to pick up a pack or two. The village store owner knows that the tobacco he is selling to the 10-year old kid is not going to be smoked by him. Is it worth the trouble even to try to enforce legislation like this here in Micronesia?



Here's where good data helps us make wise decisions on where to put our energies. If we know that most of the young tobacco users are betelnut chewers rather than smokers, we might decide that it makes more sense to ban the sale of individual cigarettes. Why? Because young chewers usually can't afford to buy a whole pack of cigarettes when they want a chew. Opening the pack and offering individual cigarettes for sale is making it far easier for a young chewer with a tight budget to get the add-on kick for his betelnut chew.

But are most of the young tobacco users today chewers or smokers? Do we know the percentage of chewers and smokers in, say, the 15-19 age group or in the 20-24 age group? If we don't have these figures, why not? Are we possibly too busy counting things that don't matter to find the figures we need to confirm who the young users of tobacco are and how we might discourage further use of tobacco among the young? Once at a Substance Abuse and Mental Health board meeting, I suggested that most young tobacco users were buying cigarettes to use with their chew. The medical officer who was presiding was just as sure that the number of young smokers was rapidly increasing. But the truth is that neither of us had anything better than general impressions to back our positions. Without numbers to support our arguments, both of us were making nothing but blind assertions.

At the Other End of the Population Spectrum

A century and a half ago, during the era of whaleships and trading vessels, an infectious disease might break out on an island and claim hundreds of lives in a matter of weeks. Even until the 1950s and 1960s, most deaths in Micronesia were due to infectious diseases. Such diseases took a particularly heavy toll among the young and weak, especially children. Today it is easy to provide children with life-long protection against the worst of these infectious diseases by simply

The rates of Palau and FSM were even higher than the immunization rate in the US (75%), a sign that we are making good progress in protecting our children from the major infectious diseases.

giving them immunization shots. The standard practice throughout the islands is to give infants a series of shots during their first year or two– assuming, of course, that they can be tracked down to receive their shots. How are we doing in our attempt to offer children this life-long protection against the major diseases? According to figures published in 1997, the immunization rates for children were 92% in Palau, 84% in FSM, and 54% in the Marshalls. The rates of Palau and FSM were even higher than the immunization rate in the US (75%), a sign that we are making good progress in protecting our children from the major infectious diseases.

The US Compact surveillance team that looks into such matters can be proud of us the progress we've made, not to mention the fact that we can document this progress. But even more importantly, we can be proud of ourselves.

Another number that is important is the infant mortality rate, which tells us how many infants per thousand die within a year of their birth. This rate, which is tabulated for the islands every few years, is a commonly used indicator of health standards throughout the world. It offers a means of comparing the quality of health care in these islands with other places. We have this number, let it be noted, because international agencies demand it.

Health departments also are encouraged to measure the percentage of children who are born underweight. Some hospitals do record birth weights, but most dispensaries don't even have a working scale. A low birth weight is an indication that something has gone wrong during gestation and that the child suffers from malnutrition. Low birth weight can lead to life-long disability or even early death. Here in Micronesia adults might be too heavy from overeating, but new-born infants are often too light because they are underfed. So we have to deal with very different problems at opposite ends of the age spectrum.

All of this is nice, but does it really tell us what we want to know: how much are students learning?

Finally, health departments are supposed to record the percentage of all first-grade students who have had their teeth treated with dental sealant. This is not because tooth decay is one of the most dangerous health problems (people can live and even eat without teeth), but because it can be done so easily for pre-school children. Like immunization, dental sealants offer the young a lifetime of protection. A program like this which is cheap and useful ought to be near the top of our list of things to do each year. Yet, it is very difficult to find numbers that show the percentage of first-grade students who have received these sealants.