"Medical Intelligence"

By Don Lyman, MD

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THE FIRST SUCCESSFUL and truly organized battle against disease and pestilence was fought in London in the mid-19th century. Dr. John Snow, a general practitioner, controlled an epidemic of cholera in his Soho neighborhood by taking the handle off a public water supply pump.

The prevailing theory of disease causation blamed "miasmas" (invisible mists from swamps and rivers) for cholera. If that were true, Snow wondered, how come the neighborhood between Soho and the Thames River had no cholera at all?

He counted cases of cholera, planting a flag on a map where each person lived. He then matched those data to those of a local "nerd" named Chadwick, who collected data on all births and deaths in London - the original registrar of "Vital Statistics."

Snow's data ("numerators") coupled with Chadwick's data ("denominators") produced disease rates which pointed to the water supply, and... removal of the pump handle.

Medical Intelligence for purposes of disease control was born.

What does the county health officer do with those little Communicable Disease Report Cards, anyway?

Since Snow's time, the importance of such a database for disease control has played out again and again in the face of high profile infectious diseases. Polio, smallpox, rheumatic fever, tuberculosis have all been productively addressed with use of these databases.

But now that these infectious diseases have become less and less prevalent, how important are these data?

What about the chronic diseases that account for two-thirds of all deaths, illnesses, disabilities and medical care costs?

Today, disease control databases include lots more than just those little cards. The collection includes:

- Communicable Disease (CD) Report Cards - (the Snow legacy) there are two uses for these cards:

  √ to enumerate and locate disease rates in the community, and

  √ to assure a route for notification of unusual disease occurrence.

- Vital Statistics - (the Chadwick legacy) these are the records of births and deaths.
- Registries - cancer, birth defects and other conditions are routinely collected for defined population bases for disease control, public policy and research.
- Medical Care Utilization Data - paid claims data keyed for units of service or physical items provided.
- Behavioral Data - citizen interviews (in person or by telephone) to determine diet, drinking, tobacco use, helmet use and other behavior.
- Environmental Exposure Data - air quality reports; drinking water quality controls; risk assessments of chemicals (such as trichloroethylene), drugs (thalidomide, for example), hazardous materials (asbestos), etc.
- Occupational Data - industrial injuries and exposures.
- Law Enforcement Records - trauma from intentional and unintentional violent acts, illegal drug dealings, fraudulent activities that affect health status.

What must a physician know about these kinds of data?

The physician should know that these data are actually used by government and other agencies for control of diseases.

√ For instance, the recent meningococcal meningitis scare in Sacramento County was thoughtfully handled by the County Health Officer with good data provided by your CD Report cards.

√ For instance, recent measles concerns in Sacramento County were well handled with good intelligence processed by the County Health Officer.

√ For instance, recent failures to report dog bites (required!) have caused real problems for a number of citizens.

√ For instance, data from the Cancer Registry showed a death rate among black women twice as high as among other women. The cause was found to be a later stage of diagnosis. The state implemented a program to get these women into screening earlier. It was successful and the death rate among black women is now going down.

√ For instance, behavioral data from the state's random-digit-dialing surveys helped plot the strategy for California's successful Tobacco Control Program. We now have a 57 percent reduction in tobacco use over the past 10 years and a commensurate 13 percent decline in cancer-related and cardiovascular disease rates (the national decline is only 2 percent).

√ For instance, we have identified a new epidemic of Type II diabetes among children in the last few years, clearly related to obesity of these children. Efforts are now underway to curb the epidemic with attention to nutrition among children.

What must a physician report besides the communicable diseases on the little card?

For the most part each physician specialty is aware of the special (and fairly obscure) reporting responsibilities peculiar to the specialty. Most such reporting requirements are shared and handled by a parent institution with the physician.

Occupational physicians know about injuries, pesticide exposures and so on. Psychiatrists know about legal reporting for certain behaviors.

Some specifics reporting requirements for all physicians include:

- Cancer, newly diagnosed
- Child abuse
- Elder and dependent adult abuse
- Injuries by firearms or assaultive or abusive conduct
- Lapses of consciousness
- Pesticide poisoning

Fortunately, "medical intelligence" is not an oxymoron. We can be proud of the documented productivity of all the free-flowing information we collect and use on a day-to-day basis. Since Snow's time we have moved well beyond planting little flags on a paper map to find the control point for an epidemic.

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