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The voice of public health physicians, guardians of the public's health

Preventive Services ToolKit Project Instructor's Manual and Supplemental Materials Module 5—Epidemiology as a Policy Tool

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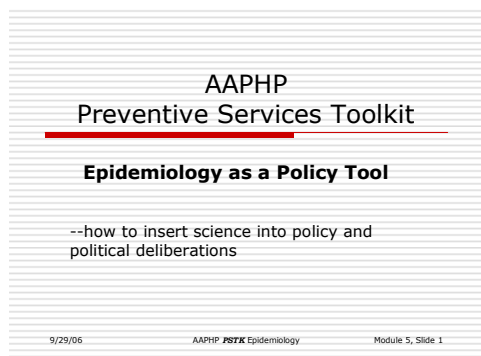
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Administrative Note:

Since its development, the Epi module has undergone considerable revision to help get workshop participants to better get the feel for a policy process. In this evolution, a number of concepts previously included have been deleted as being of lower priority. Therefore there are two supplements. One is the basic slide set. Another represents supplemental slides that could be added back for individual presentations. The third is yet other supplemental material created at the time of the initial development of this module.

Slide 1 – Title

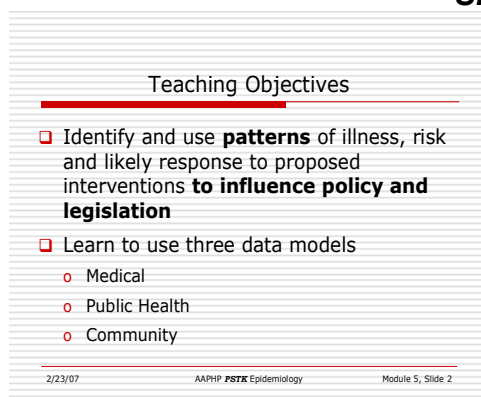


This module will discuss translation of science into policy with strong emphasis on policy. Political savvy is needed to get a program or policy approved. Once approved – if the program or policy is not scientifically sound – it will not yield the desired benefits. The only way for it to be scientifically sound is for the science to be considered in the original development of the policy or program proposal.

Therefore we consider it the responsibility of every public health and healthcare professional to assure that programs and policies that they propose or support are scientifically sound.

From a PSTK perspective – there are two major components to what we call health-related science. One is evidence from the published literature. This is addressed in our “Evidence” module – and not covered here. The other is appropriate use of epidemiologic methods for needs assessment, policy development and program evaluation. This use of Epi methods is the topic to be covered in this module.

Slide 2: Teaching Objectives



In this module, we will discuss identification and use of patterns of illness, risk and likely response and outcomes for needs assessment and program evaluation. Our focus will be on use of local data and our knowledge of causation, time sequence and biologic plausibility. This will be use of epidemiologic concepts and tools without tests of statistical significance – since, in almost all cases, local data is unlikely to have numbers large enough to demonstrate statistical significance, comparing pre to post program implementation and year to year trends.

We will go into some detail regarding use of the medical, public health and community data modules referenced just a few minutes ago.

The importance of inserting science into health policy is best illustrated by dysfunctional, but widespread Medicaid policy implemented in a scientifically unsound manner.

This story is true and is based on my (Dr. Nitzkin's) experience in Louisiana in and since 1989. At that time, Louisiana, like many other states, was in the early stages of implementing what they called their "Community Care" program intended to give every Medicaid patient a "Medical Home." The idea was to secure both continuity of care, gate-keeping and case management to improve health outcomes and minimize healthcare costs by having all care provided by or through a primary care physician who would make all needed specialty referrals. The general ideas were good - but the manner in which the program was implemented was (and in many cases still is) disastrous. By not effectively considering what we know about maternal and child health, continuity of care, gate-keeping and case management - the program has had (and continues to have) effects opposite what was originally intended.

The program in Louisiana was initiated for pregnant women, infants and children in late 1989. Since, as seen by Medicaid, health departments provided only "categorical" care - a health department clinic could not serve as a "medical home." Thus, the first phase of the program involved forcing Medicaid patients to go to private doctor's offices for their care. Since most of these patients had no private doctors - Medicaid provided them a list of local doctors to choose from. If the patient did not choose - she was summarily assigned to one - with the provision (not initially understood by patients or physicians) that, if she went to any other provider for care, that provider would not receive Medicaid reimbursement. In addition, no provision was made for these women or their infants, at that time, to waive the need to recertify Medicaid eligibility every six months. This resulted in many pregnant women receiving their prenatal care from a private doctor, then dumped back into the public system just before delivery because they had lost their Medicaid eligibility. While this was "fixed" several years later by both state and federal legislation to expand the eligible income levels and waive the six-month recertification - Medicaid never recognized the need for minority and indigent women to receive counseling, health education, assistance with transportation and other services previously provided by the public health clinic. All the dollars that used to support those services went into the doctor's fee. As a result, even with the program mid-course corrections, Louisiana African American Infant Mortality which used to run about 10% below national averages, now runs about 10% above national averages, at a cost that is probably double what it would have been had the public health clinics continued to provide these services. This entire calamity, the excess deaths, costs, etc - could have been entirely avoided, had Medicaid thought through the program with people knowledgeable in maternal and child health and modified it to prevent these adverse outcomes.

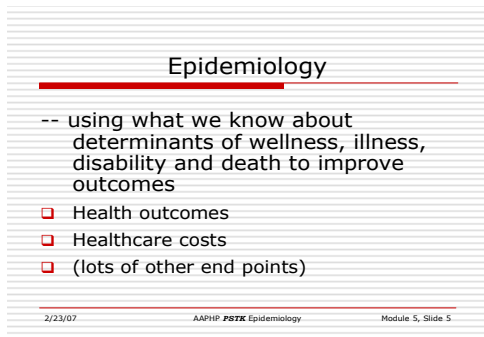
In addition to this slide set, there is an extensive set of internet "bookmarks" dealing with both Epi concepts and disease-related issues in the Epi Module Instructors Manual posted on our web site at www.aaphp.org.

Slide 3: The Problem

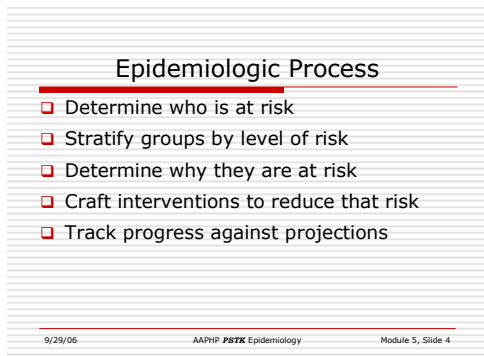
Error! Objects cannot be created from nothing. The problem we face is one in which policy is decided by administrative and political policymakers with little and often distorted understanding of medical and public health science. All too often they

Slide 4

Error! Objects cannot be created from nothing. The proposed solution, in principle, is very simple – involve highly trained health professionals in policy development – and do so by setting the need for such Epidemiology, in this presentation, will focus on the following issues and concerns – again, in terms of developing a technically sound (as opposed to politically correct) approach to public health and healthcare policy. Some might call this “qualitative” or “non-statistical” epidemiology.



Slide 6: Epidemiologic Process



The “epidemiologic process” in this context will depend on identifying who is at risk and why they are at risk so we can do something in a cost-efficient way to address or overcome that risk in a cost-efficient manner.

This epi process raises the issue of “**stratification**” mentioned in the introductory presentation. While not a problem for public health or in community settings – this is a major problem in healthcare settings.

Stratifying the population in order to deliver selected preventive or other services to a subset of enrollees, all of whom have the same insurance policy is very difficult because of the health insurance mindset that strongly opposes such “discrimination.” They have no difficulty with physicians individualizing patient treatment. They have little difficulty with specifying a group of individuals eligible for a specific service – so long as that service is prescribed or provided to one patient at a time. What they cannot abide is offering a specific service only to one group of enrollees that is not freely offered to all others. They also have major difficulty – for a preventive service offered to all enrollees that is more aggressively marketed to one specific group.

For example - imagine a company with six work sites, one of which is a giant warehouse with a staff that is lower wage than the rest, with many smokers and many obese and physically unfit individuals. Not only is this apparent from the healthcare utilization data, but it is also obvious on walk-through of the facility. The epidemiologically sound way of addressing this situation would be to do a bit of research with the staff, then design and implement health education, counseling programming and perhaps some environmental interventions (ban smoking, exercise room, modification of cafeteria menu, etc) at this facility to meet the needs of this population. One can expect the

health insurance plan to be unwilling to fund the health education and counseling unless this is also offered and equally marketed at the other five company facilities. This, in turn, would be epidemiologically unsound in that it would fill the service with volunteers who would enjoy the service, but have little to gain, and, more than likely fail to reach the more resistant hard-core staff in the warehouse facility. If the company wants this done in a cost-efficient manner, it will have to do so on its own, without involvement of the health insurance plan.

An alternative, if most of the staff in that facility live in one part of town or belong to a specific church - is to have a community sponsor and a community-based approach. Developing such community partnerships, despite their major advantages, is simply beyond the capability and against the organizational culture of most health insurance plans and most healthcare facilities.

Another major advantage of getting facts and numbers straight before implementing a new program is a dramatically enhanced ability to engage in continuous program evaluation against pre-program baselines.

Slide 7: Epi Research v. Epi as a Policy Tool

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Slide 9 – Diabetes Class Exercise

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Many of us have been taught to think of epidemiology as a primarily statistical discipline. In fact, there are two components – one – primarily qualitative dealing with patterns and relationships; and, the other – dealing with the statistical confirmation or refutation of these patterns and relationships. Epi research is highly statistical.

When using Epi as a policy tool – the qualitative aspects predominate and one rarely if ever uses tests of statistical significance.

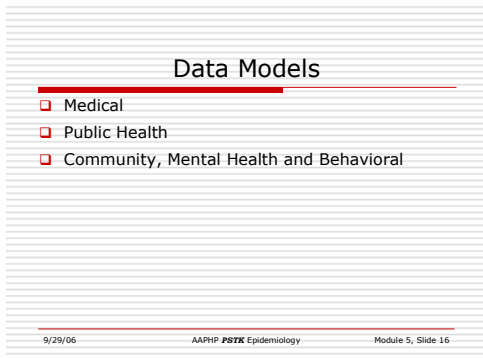
For this exercise – the instructor should have the table below handy as a reference. It is not currently reproduced on any slide.

Level of Prevention	Goal		or
Tertiary for diabetes	Prevent death in patients with advanced diabetes		major interventions
Tertiary for diabetes	Prevent complications of diabetes	Emergency room and inpatient utilization as a surrogate for complications and diabetes out of control	Number of covered lives under care for diabetes
Secondary for diabetes	Early diagnosis and treatment of diabetes	Number of newly diagnosed diabetics	Number of covered lives meeting criteria to qualify for screening
Primary for	Reduce the incidence of diabetes	Number of obese type 2	Number of obese

diabetes; Tertiary for Obesity	among obese individuals through weight loss and improved lifestyle	diabetics	covered
Primary for Obesity	Reduce the prevalence of obesity and overweight	Number of overweight and obese individuals	Number of covered lives

Slide 10: Diabetes Class Exercise

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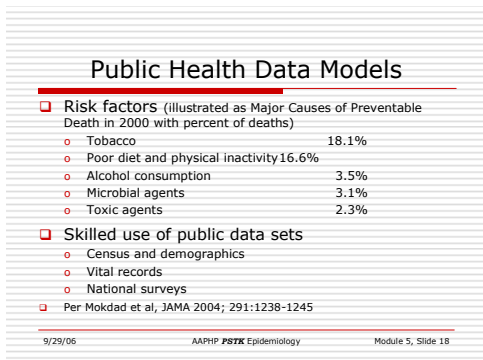
lth
il
neatun/behavioral. These will be explored, one at a time, in the next three slides.

This is but one of many ways to lump and divide concepts and paradigms for exploring root causes of illness in the community. This scheme is the one we have found most useful.

Slide 12: Medical Data Model

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Slide 12:



▪The medical paradigm sees health issues in terms of diagnosis and procedure. While this is appropriate when the mission is one of treating illness – it simply does not meet our needs for planning and evaluating preventive services. An example of the medical data paradigm is shown in this slide – as the five leading causes of death in the year 2000

to the two top ranked risk factors – tobacco and poor diet and physical inactivity.” In addition to framing health issues in terms of their major risk factors, the Public Health data model includes consideration of securing and tabulating data from census, vital records and other major data sets.

Slide 14: Community Data Models

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The third of the three paradigms consists of the factors most likely to be most visible to people in the community, especially within socially and economically disadvantaged communities. If health professionals are to partner with community stakeholders – as proposed in the Partnering module, it is critically important that the health professionals develop an understanding of these issues and feel comfortable dealing with them.

Final Comments

- ❑ Supplemental Materials appended to Instructor's Manual
 - <http://www.aaphp.org>, under "Preventive Services ToolKit"
- ❑ Q and A

As with the Evidence and Planning modules, there is a package of supplemental material pertinent to this module, available on line at www.aaphp.org, with no registration or membership required. It is appended to the Instructor's manual, and, in the case of the Epi module, it consists of hotlinks to a wide array of internet resources dealing with Epi methodology, specific diseases and selected management and policy concerns.

Supplementary Slides

Administrative Note

These supplemental slides are included for use to groups of trainees who could benefit from this material, provided time is allowed for inclusion of this material. Generally speaking, this material should be inserted in the sequence presented below, and inserted between the diabetes exercise and data models slides in the main slide set.

Slide S1 – Sub-Populations v. Communities

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Sub-populations exist on paper, but may or may not correspond to identifiable “communities.” We use sub-population data to assess need, plan for and evaluate preventive services. Once that is done, we then seek true communities (like church or social club membership, employees of a given company, etc, as a way to reach as many of the people within the sub-population of interest as possible.

Slide S2: Policy

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“Tactics” refers to the details of implementing a strategy – like deciding where to locate the new health

“Policy” also involves deciding who plays a large role in health-related decision-making. Clinical and community preventive services

Policy” is the translation of ideas into action – deciding what you want to do, and how you want to do it. In this context, it involves the selection of problems to be addressed and the interventions to address them.

“Strategy” is long-term and large-scale policy – like deciding whether or not to have a dedicated *diabetes management education program for Hispanic patients* in your medical center.

- for example - the decision by many public health agencies that they will only provide healthcare to uninsured clients will sharply limit the amount of service they can provide, and will, more than likely drive away some clients for whom this would be the best and most culturally sensitive source of care.
- The decision within many healthcare systems to make available health education to all members as a service any member can access, if desired - is usually implemented in a way that fails to aggressively reach out to those who could most benefit from this service. This, in turn creates a situation in which the service is mainly used by the worried well, who have little to benefit from it, while those most in need of the service never connect with it. (the policy issue here is one of stratification and dedication of the service to those who most need it).

Another example, from my (Joel Nitzkin) personal experience, relates to a novel set of immunization programs initiated in Dade County (Miami) Florida, in the early 1970's. When I first arrived in Miami, as the newly hired County Epidemiologist, I was immediately confronted with an outbreak of measles in the Model Cities area and a health department plan to conduct a mass measles immunization program - that community leaders strongly objected to.

In order to learn more about the problem and how best to proceed, I arranged to meet with the leaders of that African American community. They told me that they were tired of being treated like livestock by the health department, and would have no part of yet another mass immunization program. They also noted that they were in the process of developing their own new federally-funded community health centers. On the basis of that input, I offered to develop a unique immunization program specifically designed for their community. We (the health department) would provide staff and all materials and supplies to immunize every man, woman and child in need of any routine immunization, and do so at four to six week intervals at the sites of the proposed new health centers. The centers, in turn, could maintain desks at which the clinic participants could sign up. We would maintain our immunization records in duplicate, and provide the copy to the health center as the beginning of their medical record. This offer was enthusiastically accepted and immediately implemented. The enthusiasm was such that they effectively mobilized all the local churches, local businesses and others to hype this clinic, with excellent response. Based on the success of this endeavor, we then proceeded to develop equally innovative approaches to immunization for residents of low-cost high-rise rental units, county-wide and for the migrant labor camps. The result was a total cessation of diseases preventable by routine childhood immunization over the next four and a half years - until I left Dade County for another job. After I left, I was replaced by a very conventional physician epidemiologist who dismantled all of the innovative programming and went back to immunization business-as-usual clinics. About two years after that, while attending the annual meeting of the American Public Health Association, I sat in on a presentation from one of the two Model Cities Community Health Centers describing the return of epidemic measles to the community, and their lack of success in bringing it under control.

Slide S3: Politics

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Slide S4:

It exists in both “big P” and “little p” form – but the process is the same both ways. It is based on stakeholder conflict and negotiation. Science plays no part in such political discussions unless one of the

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Health-related can and should be developed on the basis of both science and relevant politics. The example given just a moment ago, involving immunization in the Model Cities area of Miami is an excellent example.

Slide

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Again, science in this module is limited to discussion of use of epidemiologic methods as a policy tool. The other aspect – use of evidence from published literature is the subject of a

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We should never forget that the purpose of preventive services is improve health outcomes.

In the case of tertiary care DM programming, another substantial benefit is enhanced patient understanding and adherence to prescribed regimens of treatment. Once educated to this behavior for one diagnosis, the chances are good that the patient will show

Once patients find that following your advice for one problem works they are much more likely to take your advice on other issues. For example; a patient who improves his or her ability to walk and up and down stairs after following a diet and losing weight is more likely to follow recommendations to stop smoking, drink less alcohol and consider counseling for diabetes management. This is consistent with evidence that once people improve one aspect of their life they are more likely to change other lifestyle behaviors such as wearing seat belts.

Patients whose health improves are more likely to interact well with staff members, giving them credit for helping with their improved status. They, in turn, will relate better to each other, leading to improved morale in the office/institution.

The combination of these outcomes is likely to lead to a competitive advantage in the market place.

Slide S7: Impact – Unfavorable

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Others, however, are likely to be unfavorable or render both it and you – as the

The process by which one does such projects. Basically you go through the Power Strategy consideration of the major stakeholders and other impacts, both positive and negative positive impacts were presented on the for other health conditions, increased staff for the sponsoring insurance plan or medical center. Some of the likely adverse consequences are presented on the current slide (read slide).

When planning a new program or policy initiative, it is critically important to project as best you can the likely impacts, other than the intended benefit, from the perspective of each of the major stakeholders, participants and recipients of service. Some, as noted above, are likely to be favorable – some so favorable that they more beneficial than the intended benefit.

When planning a new program or policy initiative, it is critically important to project as best you can the likely impacts, other than the intended benefit, from the perspective of each of the major stakeholders, participants and recipients of service. Some, as noted above, are likely to be favorable – some so favorable that they more beneficial than the intended benefit.

Once you have identified the type of impact – the next step is to try to estimate as best you can the intensity of the impact – either favorable or unfavorable. Having done this, you can then build into your planning process steps to magnify the positive impacts, minimize the negative impacts and identify the parameters to be tracked to ascertain the intensity and importance of each of these program outcomes. In some cases, this ascertainment might involve individual or group interviews with staff or patients at three and six months into the implementation of the program.

Slide S8: Small-Numbers Epidemiology

Small-Numbers Epidemiology

- ❑ Statistical significance impossible with community-level planning and evaluation
- ❑ **Rely on baselines and trends**
- ❑ $p < 0.2$ guideline can be used for program evaluation and use of GIS, Epi, and Statistical software
- ❑ **NEVER** base a local or state policy decision on a test of statistical significance

9/29/06 AAPHP **PSTK** Epidemiology Module 5, Slide 14

When conducting clinical research, one usually goes through a statistical exercise by which one estimates the sample sizes needed (numbers of cases and numbers of controls) to achieve statistical significance at $p < 0.05$, if results come out as expected. When doing public health programming or disease management in a healthcare setting, one does not have the option of securing larger sample sizes, and, only rarely, does one have the luxury of arranging for a “control” group.

As a matter of fact, even before and after differences, beyond

the initial implementation of a public health or clinical preventive service are almost impossible to achieve in practice because the differences tend to be relatively modest (like a 10% reduction in infant mortality following an aggressive MCH program) and the numbers of cases small.

How does one then proceed to set up a data system to track whether or not the program is working as intended??

The usual advice is to aggregate data over a three to five year period to get larger numbers – but, in practice, with annual budgets and reports, this tends not to be satisfying.

While aggregating the data for statistical significance tends not to be satisfying, aggregating the data to smooth the trend line does tend to be helpful in providing convincing evidence of program effectiveness.

In practice, simple visual presentation of trend lines (smoothed or not) and comparison of each year's data compared to the immediate pre-implementation indices seem to work best. This is not as simple as it may seem because, in addition to the trending of the data, it may be important to do some risk adjustment – especially in healthcare plans and in medical centers where there may have been significant year to year changes in enrollment.

While in common use in social service programs, use of $p < 0.2$ (an 80% chance that the result was not due to random variation) can enable use of statistical and software tools for illustrating program progress or the lack thereof.

A discussion of risk adjustment methodology is beyond the scope of this presentation – but a few suggestions may be offered in response to questions from workshop participants:

1. The easiest way is to separately track major employer data and other major group data that may have been stable from year to year.

2. A second way would be to separately track by age, sex, insurance carrier, or other socio-demographic variables as may be available to you.

(neither of these methods will be perfect, and professional judgment will be needed to assess the reliability of these risk adjustment methods)

Slide S9: Syndemics

Error! Objects cannot be created from editi ***(suggested approach is to do the introductory statement, then read through the slide and ask for questions. The material below the introductory statement is intended to help the instructor answer such questions.***

Supplemental Material to Help Instr

▪ Syndemics provides an approach to cope with the new epidemics of chronic disease in a population, the new epidemics of chronic disease in a population.

▪ Syndemics is defined as *two or more a burden of disease in a population.*

▪ A syndemic orientation is primarily directed at examining connections between health-related problems. With this concern, it offers a broader framework for understanding how multiple health problems interact in particular communities. A syndemic orientation elevates public health inquiry beyond its many individual categories to examine directly the conditions that create and sustain overall community health.

▪ Further the medical model of disease specialization, once praised for its utility and versatility, is proving inadequate for confronting such contemporary public health challenges as eliminating health disparities where

Introductory Statement: While a full discussion of Syndemic methodology is beyond the scope of this presentation – Syndemics is included in this slide presentation because it reflects the way community people tend to look at clusters of health-related problems impacting their community.

chronic disease adversely affect certain defined populations when compared with those on whom most research has been performed, white males have remarkably different risks and outcomes..

- Although conventional prevention programs have had strong effects, for the most part the categorical approach has failed to assure the conditions for overall community health, and it has done little to spread successes equitably among subgroups in society.
- Related concepts include: linked epidemics, interacting epidemics, connected epidemics, co-occurring epidemics, co morbidities, and clusters of health-related crises.
- In addition to considering single risk factors that impact the incidence of multiple diseases, it also considers how the burden imposed by one disease complicates the management of the others. A syndemic approach facilitates the search for interventions that can simultaneously address multiple linked health problems in a manner acceptable to the host community and in a way that will not make any of the problems worse.
- The tools of syndemics include the basic tools and concepts of epidemiology and biostatistics, plus two types of tools not commonly used by epidemiologists and healthcare policy makers.
 - System dynamics tools look at the ecosystem in which the illness occurs and provide both qualitative and quantitative analysis of how multiple variables interact with each other.
 - Navigational software can be used to estimate the directionality (getting better or worse) and strength of proposed alterations of the ecosystem.

Domains addressed include all four community environments (social, physical, biologic, and administrative/political plus common etiologic factors and how each illness impacts each of the others.

Supplementary Materials

Surveillance Bookmarks

Epidemiology Super-course (U. Pitt)

<http://www.pitt.edu/%7Esuper1/>

CancerBACKUP Active surveillance (active monitoring)

<http://www.cancerbacup.org.uk/Cancertype/Prostate/Treatment/Activesurveillance>

CDC Division of Public Health Surveillance and Informatics

<http://www.cdc.gov/epo/dphsi/casedef/>

European Influenza Surveillance Scheme

<http://www.cdc.gov/epo/dphsi/casedef/>

FoodNet (CDC) - Diseases & Pathogens Under Surveillance

<http://www.cdc.gov/epo/dphsi/casedef/>

NHS – Surveillance Data

<http://www.show.scot.nhs.uk/sciehl/surveillance.html>

Influenza Surveillance – Canada Definitions for the 2004-2005 season

http://www.phac-aspc.gc.ca/fluwatch/04-05/def04-05_e.html

Johns Hopkins Hospital System – Surveillance

<http://hopkins-heic.org/surveillance/>

Update on Vaccine Safety Issues .

http://www.phac-aspc.gc.ca/publicat/pch/vol3supb/pche_i.html

CDC - Pediatric & Pregnancy Nutrition Surveillance System

<http://www.cdc.gov/pednss/>

Monitoring and Surveillance for Livestock and Poultry Diseases

<http://www.aphis.usda.gov/vs/naahps/surveillance/>

US-AID - Faculty Based Surveillance

http://www.usaid.gov/our_work/global_health/id/surveillance/fbrrsurveillance.html

Cardiovascular Disease Bookmarks

Prevention and Cardiovascular Disease (AHA)

<http://www.americanheart.org/presenter.ihtml?identifier=1247>

Cochrane Library

<http://www.cochrane.org/reviews/en/ab000362.html>

Facilitating Prevention in Primary Care

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6439332&dopt=Citation

Screening for Diseases:Prevention in Primary Care(ACP) <http://www.rsmppress.co.uk/bksnow.htm>

The Framingham Study, The first 50 years. <http://www.framingham.com/heart/>

Framingham & Epidemiology\

<http://www.hhmi.org/biointeractive/museum/exhibit98/content/e2info.html>

Coronary Risk Profile - Health Risk Appraisal

<http://www.americanheart.org/presenter.ihtml?identifier=4528>

Risk Stratification and Epidemiology of Sudden Death

<http://www.biomedcentral.com/1523-3782/6/>

Epidemiology and prognosis of coronary heart disease

<http://patients.uptodate.com/topic.asp?file=chd/64193&title=Angina>

Barriers to Prevention and to Cardiovascular Health

Barriers to Dietary Control (JAMA)

<http://jama.ama-assn.org/cgi/content/full/287/10/1258>

Barriers to Prevention

<http://www.merck.com/mmhe/sec01/ch005/ch005d.html>

Barriers to Cardiovascular Health

<http://72.14.203.104/search?q=cache:K2U8pVuYvDsJ:www.hhs.state.ne.us/hew/hpe/cvh/docs/ch5barriers.pdf+prevention+barriers&hl=e>

Medicare Benefits

Medicare Prevention Benefits

http://www.samhsa.gov/MMA/mma_benefits.aspx

Contribution of Lifestyle-Related Factors to Preventable Death

<http://www.iom.edu/CMS/3793/24066.aspx>

Definitions

<http://www.pitt.edu/%7Esuper1/> U.Pittsburgh -Epidemiology Page

Epidemiology- Definitions <http://www.google.com/search?hl=en&lr=&rls=GGLD,GGLD:2004-33,GGLD:en&oi=defmore&defl=en&q=define:epidemiology>

The WWW Virtual Library <http://www.vlib.org/>

Medicine and Health Epidemiology <http://vlib.org/Medicine>

Glossary of Clinical Epidemiology

<http://www.med.ualberta.ca/ebm/define.htm>

Public Health Model of Prevention

Primary Prevention in the Adult (AHA)

<http://www.americanheart.org/presenter.ihtml?identifier=4704>

Secondary Prevention(AAFP)

<http://www.aafp.org/afp/20050615/2289.html>

Tertiary Prevention(Diabetes - see fourth paragraph)

<http://www.healthierus.gov/steps/summit/prevportfolio/strategies/reducing/diabetes/prevention.htm#levels>

Gordon's Continuum of Care Model

Gordon's Continuum of Care

<http://www.mentalhealth.samhsa.gov/publications/allpubs/SMA00-3437/SMA00-3437ch3.asp>

Syndemics

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<http://www.cdc.gov/syndemics/>

Syndemics - Definition <http://www.cdc.gov/syndemics/overview-definition.htm>

Syndemics – Uses <http://www.cdc.gov/syndemics/overview-definition.htm>

Syndemics - Planning & Evaluation

<http://www.cdc.gov/syndemics/overview-planeval.htm>

Qualitative Epidemiology

Institute for Qualitative Epidemiology

<http://www.uofaweb.ualberta.ca/iqem/nav03.cfm?nav03=35213&nav02=33481&nav01=30519>

Quantitative Epidemiology

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8935733&dopt=Abstract

Environmental Scanning

An Environmental Scan

<http://www.oclc.org/membership/escan/default.htm>

Environmental Scanning <http://www.horizon.unc.edu/courses/papers/enviroscan/>

Political, economic, social, and technological impact on the CNIB.

<http://www.cnib.ca/strategicplan/scan.htm>