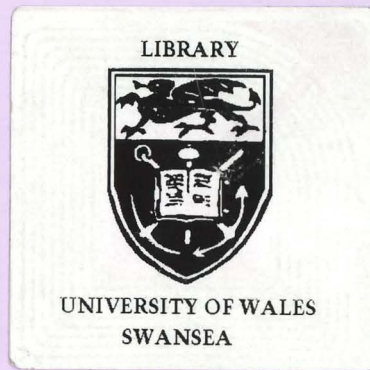


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by

Professor Dame June Clark

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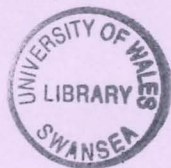


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"The elements of nursing are all but unknown"
Florence Nightingale

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Professor Dame June Clark
Professor of Community Nursing

INAUGURAL PROFESSORIAL LECTURE

"THE ELEMENTS OF NURSING ARE

ALL BUT UNKNOWN"

(Florence Nightingale)

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"THE ELEMENTS OF NURSING ARE ALL BUT UNKNOWN"

More than a hundred years ago Florence Nightingale wrote:

"the elements of nursing are all but unknown"
(Notes on Nursing 1859)

Yet still today, in spite of all the efforts of her successors, a problem remains: nursing is still poorly understood, and because it is poorly understood it is undervalued. Many people do it, and many more have experienced it. So why is it that nursing still has this problem? The reasons have provided the content for many a nursing lecture, but today I want to talk about just one, and to set it within a framework which I have begun to develop for the programme of research in community nursing which it is my task to develop here in the University of Wales Swansea.

Since the business of universities is the generation, testing, and transmission of knowledge, I am going to talk about the generation, or rather the articulation and formulation, of nursing knowledge.

The problem of nursing knowledge is not, as some assert, that it does not exist, but that because nursing is young as a scientific discipline, its knowledge base is not yet well articulated, nor is it formulated in ways that make it accessible to the kinds of analysis which other disciplines use. Much of it is, as Benner (1984) noted, "embedded in clinical practice".

I am going to argue that developing nursing knowledge through what is sometimes called basic (as opposed to applied) research is an essential but neglected activity, and I will make some suggestions about how this might be done.

CLINICAL EFFECTIVENESS

Let me take as an example the most pressing research imperative in the health service today. It's the imperative of clinical effectiveness, also referred to (although not quite synonymous with) evidence based practice, or from a research perspective, the measurement of health outcomes.

Here is the official definition of clinical effectiveness:

"the extent to which specific clinical interventions when deployed in the field for a particular patient or population, do what they are intended to do ie maintain and improve health and secure the greatest possible health gain from the available resource" (NHSE 1996)

In common parlance that means: Does the treatment work?

We know from what patients tell us, and now also from rigorously conducted research (RCN 1996), that skilled nursing works. But we are not yet able to be very precise about exactly what difference it makes, to what, and why. That makes nursing, and especially community nursing, vulnerable to the kind of inappropriate substitution which sees nursing as too expensive and easily replaceable by other, cheaper healthcare workers. And it is a particular challenge for nursing research.

Notice those words "specific clinical interventions",

and

"a particular patient or population".

And

"do what they are intended to do"

The trouble is that we cannot measure the relationship between "specific clinical interventions" and "what they are intended to do", until we can say precisely what the specific intervention is, what it is intended to do, and to what. Exhortations about clinical effectiveness in nursing, both to practitioners and to researchers are useless until we have a much clearer understanding than we do right now of what nurses do, for what conditions, and with what results. These are what I call the "elements" of nursing.

Let me illustrate with a picture and some examples:

Figure 1 shows a generalised model for investigating clinical effectiveness.

A patient has a problem. Without any intervention at all there will be a natural outcome. The problem will either go away of its own accord, or it won't, and, at worst the patient may die.

A treatment or intervention is intended to change the natural outcome to a preferred, or clinically effective outcome.

Lets start with a simple medical example. (Figure 2)

Here the problem is "pneumonia"

Natural outcome: either the body's own resources will overcome the infection and the person will live, or they won't, and the person will die.

Intervention: antibiotic.

Clinically effective outcome: the infection will be cured.

Now lets consider it in a bit more detail.

We know that if we use the wrong antibiotic, it won't work.
So how does the doctor decide?

First he has to know about the problem that is the focus of the intervention, because we know that particular antibiotics are only effective against particular types of pneumonia.

In fact we do know quite a lot about the condition called "pneumonia". Doctors everywhere recognise the term "pneumonia" and know what it means. The clinical characteristics (signs and symptoms) whose presence or absence will lead a doctor to identify the problem as pneumonia, have over many years been observed, recorded, analysed, discussed in the literature, so that any doctor faced by a new patient with these characteristics will reach the same diagnosis, and will call it "pneumonia". Researchers studying pneumonia in Swansea and Swaziland know that they are investigating the same phenomenon, and are thus able to

compare their results, and to build up a cumulative body of knowledge about "pneumonia" and its treatment.

The term "pneumonia" is listed and coded in the International Classification of Diseases and Related Health Problems (WHO 1992). In fact several terms are listed and coded, classified in this case by the causative organism:

- J12 viral pneumonia
- J13 pneumonia due to streptococcus pneumoniae
- J14 pneumonia due to haemophilus influenza
- J15 bacterial pneumonia
- J16 pneumonia due to other infectious organisms
- J17 pneumonia in diseases classified elsewhere
- J18 pneumonia, organism unspecified

and all these are distinguished from:

J20-22 other acute lower respiratory infections

This precise specification of the problem is important, not only for the epidemiological purposes for which the ICD was invented. The doctor has to be able to recognise the different types of pneumonia, in order to choose the specific clinically effective intervention.

Now consider the intervention.

We know a great deal about the antibiotic before we use it. We know which types of pneumonia it is effective against and which it isn't. We know its chemical composition, the elements from which it is made, and we know how to replicate them exactly. We know the effects of different doses, how much you have to use to be effective, what other drugs to use with it to potentiate its action, and what other drugs to avoid because they interfere with its action. There has been a great deal of basic research to describe and define the intervention, what exactly it is, and why and how it works.

All this the doctor knows, or can find out, as a result of a century of basic research. The condition called pneumonia has been extensively studied and its clinical characteristics have been observed and described. Each causative organism has been studied under the microscope; we know how it operates inside the body, how it shows itself in different people, and in different circumstances. And we know what the intervention is, and how and why it works.

The research that was done to generate, formulate and test all this knowledge, - the knowledge that the doctor uses in his clinical decision-making as well as in medical research - is what we call medical science.

Now lets take a nursing example. (Figure 3)

First of all the diagram itself is likely to be much more complex because in nursing neither the problems nor the interventions come singly. The problems that are the focus of nursing interventions are much more complex than medical problems, because while medicine is primarily concerned with the disease process itself, nursing is concerned with the human responses of unique individuals.

Secondly, it's likely that the nurse will use several interventions at the same time, and will use one intervention as a vehicle for several others (I'll come back with an example of that in a minute).

Let's take the example of a nurse working with a newly diagnosed diabetic who has to become able to manage a special diet and inject his own insulin at home.

What exactly is the problem to which the nursing intervention must be directed? Clearly it is not the disease called diabetes which is the medical diagnosis for which a medical intervention (insulin) has already been prescribed.

It is not adequate to describe the problem simply as "unable to administer his own insulin and to manage his diet at home", because that does not give enough information to form the basis for the choice of intervention. Also of course it's an awful lot to write and nurses do not like to "waste time" on documentation.

So what are the conditions to which the nursing interventions must be directed? Some possible nursing diagnoses might be:

anxiety
self-care deficit
ineffective coping
knowledge deficit
ineffective management of therapeutic regimen

These terms are taken from the NANDA taxonomy of nursing diagnoses (NANDA 1997) which has been translated into several languages and is used in several countries, but they are unlikely to be recognised or understood, let alone used in routine documentation, by nurses in the UK. There is no ICD for nursing, and there are as yet few descriptions of the clinical characteristics (signs and symptoms) which might lead the nurse to diagnose "ineffective coping" rather than "knowledge deficit". Yet just as in the case of pneumonia, such knowledge is crucial for the choice of a clinically effective nursing intervention.

Suppose the nurse identifies the problem as "knowledge deficit" and decides to use the intervention called "patient teaching?" What exactly constitutes "patient teaching"? How much of it do you need? In what strength? By what route? What potentiates it? What inhibits its effectiveness? How does it differ from "giving advice" or "counselling". What works best in what circumstances? And why?

This knowledge - knowledge about the problems that are the focus of nursing intervention, and the interventions that we use - is what I call nursing science.

The problem for nursing is that while our science is young and not yet well formulated or tested, nevertheless the model of clinical effectiveness which we are required to follow requires the measurement of the effect of variable A (the intervention) on variable B (the problem) with all other variables controlled. There is of course a big debate about the extent to which in real life it is possible to control all the other variables. But over and above this, we have the problem that we cannot describe, let alone understand the relationships between the variables until we can better specify, define and describe the variables themselves.

A LANGUAGE FOR NURSING

Being able to describe what nurses do, for what sort of conditions, and with what sort of effect, is the vision of a project developed by the International Council of Nurses to develop an International Classification for Nursing Practice. I have been involved for some six years now as a member of a small development team, working with Professor Norma Lang of the University of Pennsylvania, and Randi Mortensen who is head of the Danish Institute of Health and Nursing Research in Copenhagen.

The aim of the ICNP project is to develop a vocabulary and classification system that can be used in nursing documentation, and in electronic records, by nurses in any clinical setting, and in every country of the world, to describe their nursing, and to ensure that it is incorporated in all the information systems which are increasingly used to describe, manage, and define healthcare. I sometimes liken it to the ICD for medicine, but in fact it is much more sophisticated, for unlike ICD and indeed the classifications developed for most other disciplines, it includes, and offers the potential for linking, the three dimensions of what nurses do (nursing interventions), the phenomena to which the interventions are directed (nursing diagnoses), and their effects (nursing outcomes)

It involves:

naming, sorting and linking
phenomena which describe
what nurses do
for what human conditions
with what results

That is, what I call the elements of nursing:

nursing diagnoses
nursing interventions
nursing outcomes

The goals of the project are:

- Goal 1 To develop an ICNP with specified process and product components
- Goal 2 To achieve recognition by the national and international nursing communities
- Goal 3 To ensure that the ICNP is compatible with and complementary to the WHO family of classifications and the work of other standardisation groups, and to secure inclusion of the ICNP in relevant classifications.
- Goal 4 To achieve utilisation of the ICNP by nurses at country level for the development of national databases
- Goal 5 To establish an international data set and framework that incorporates the ICNP, the Nursing Minimum Data Set, a nursing resource set, and regulatory data

It is a hugely ambitious, but very exciting project.

The project has now reached an important milestone in that an Alpha Version was published at the beginning of this year (ICN 1996), and nurses all over the world have been invited to participate in its development by testing, modifying and expanding it, with a view to producing a Beta version in 1999.

One of the first things we did when we began the project was to undertake a survey (Wake et al 1993) to find out what was happening in this field of work across the world. At that time (1990) there was almost nothing outside the USA - just a little in Australia and in Canada. When we repeated the survey in 1995 the situation had changed dramatically. In particular in Europe several countries (including the UK) were undertaking major work on the development of standardised languages for use in the information systems which were developing even more rapidly for use in the planning and management of healthcare. The sudden explosion is of course no accident: it is the result of the coincidence of two factors: the imperatives of healthcare reform based on a market model which requires information for costing, and the rapid development and increasing availability of information technology.

For nursing this brings two challenges: firstly to ensure that nursing, which constitutes the greatest part of healthcare, is included in the information systems which are developing very fast and are already being used for the planning and management of healthcare; and secondly to ensure that it is expressed in a form (that is a language) which adequately reflects the richness of its contribution to healthcare.

These two challenges are encapsulated in two quotations which we have used many times in the project and have now almost become clichés:

"If we cannot name it, we cannot control it, finance it, teach it, research it, or put it into public policy"

Lang 1991

and

"In future nursing will be defined, managed and controlled by the information about it that is held in computerised information systems"

Clark 1995

DEFINING NURSING BY ITS PURPOSE

People have tried to understand or define nursing in a number of ways:

One way is by its purpose.

And Florence Nightingale was probably the first to use this approach: she wrote:

"Nature alone cures... And what nursing has to do ... is to put the patient in the best condition for nature to act upon him"

(Nightingale 1859)

but probably the most widely used definition of this kind is that of Virginia Henderson:

"The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will or

knowledge. And to do this in such a way as to help him gain independence as rapidly as possible. This part of her function she initiates and controls; of this she is master.

In addition she helps the patient to carry out the therapeutic plan as initiated by the physician... She also, as a member of a medical team, helps other members, as they in turn help her, to plan and carry out the total program whether it be for the improvement of health, or the recovery from illness, or support in death"

(Henderson 1960)

A second approach is to define nursing by saying what it is about - its domain:

Disciplines are built around a defined domain which in essence consists of its particular perspective on its particular phenomena of concern. Nursing shares many phenomena of concern with medicine, just as medicine shares many of its phenomena with physiology; but each discipline also has its own phenomena and its perspective even on the shared phenomena, is different.

The particular perspective is important because as Meleis (1997) has pointed out:

"When people look at a discipline through the lenses of another discipline's domain, they tend to devalue its phenomena and to trivialise the questions that are its central concern but may not be central to the other discipline"

This is what happens when nursing is seen, as it often is, through the lenses of medicine.

The "phenomena of concern" are, of course, what I call its elements.

A third, and in my view very dangerous, way of defining nursing is by its activities. This approach is commonly used in the NHS at present, not by nurses, who deeply resent it, but by those who have failed to understand the distinctiveness of nursing among other healthcare activities. You will find it in the activity records which community nurses are required to keep of their work (especially in the computerised information systems which are often used to provide information for planning and resource allocation); and in the now extensive literature on "multiskilling" and "re-engineering" healthcare, most recently in the "Manchester Report" on "the Future Healthcare Workforce" which advocates that the majority of patient care should in future be provided by what it calls a "generic carer".

(Schofield 1996)

This approach sees nursing as a collection of relatively simple tasks which, taken as tasks, could be done by anyone with a modicum of training and a little common sense.

But saying that nursing is just what nurses do is as simplistic as saying that loving is just what lovers do. Nursing, like loving, is a highly complex activity.

Let me give you an example: a classic of my own field of community nursing - bathing.

Bathing somebody is a task done by mothers, relatives, and all kinds of people. In hospitals it is the kind of task that is often described as "basic nursing care" and delegated to lesser trained auxiliaries. But sometimes, we believe, it requires a skilled nurse. The question is when, and why?

There have been many studies of the activity of bathing, although few have been sufficiently rigorous to be called research. Studies have calculated the average time it takes, whether it needs one or two people, and these measures, have been used for costing the service. Work

study experts can analyse the degree of skill being exercised by the bather, and they might find that the experienced auxiliary is as skilful as the nurse. But just analysing the activity of bathing will not tell you when or why it needs a nurse.

What *will* tell you, is the particular patient conditions that the nurse has identified or diagnosed - for example, that this particular patient is confused, or in pain, or at risk of skin breakdown.

In other words, you cannot understand what nurses do without understanding why they are doing it. Nursing interventions cannot be understood without reference to nursing diagnoses; for it is the nursing diagnosis which gives the purpose and the focus of the intervention and makes it nursing. And the outcomes of the intervention cannot be understood without understanding the problem to which they were directed. (Figure 4)

As I said, nursing is a highly complex activity

The expert nurse may also use the activity of bathing for several purposes, and may achieve several different outcomes - in the case of this particular patient her purpose may be not just to clean him, but to assess his skin condition, his pain, his mobility, his other health needs; to teach him or his informal caregivers; to establish the trust which will give him confidence and encourage his own efforts; to express through her touch as well as in what she says that she cares and is "there for him"- which may be more important to achieving the outcome of his sense of wellbeing than any other aspect of the intervention called bathing

And the paradox is that the more skilful the nurse is in what she does, the less likely will be the observer, or even the patient, to recognise exactly what she has done.

So let me give you another example, this time to show you how the right kind of data used in the right way, can identify the specific nursing contribution. This time my example is about feeding a patient who has suffered a stroke.

For several years now, the Belgian Department of Health has collected and used data about nursing interventions as part of its system for allocating hospital budgets (Sermeus et al 1994). The data is now also being used by nurse researchers to identify patterns and linkages and to examine the effectiveness of nursing. In one study (Evers 1997) the nurse researchers were able to show that when the proportion of qualified nurses in the workforce was low, the patients continued to be fed, but the accompanying teaching and support which enables such patients to achieve independence in feeding themselves fell dramatically. The nurses were able to argue that the short term cost savings would, by increasing and prolonging patients' dependency, lead to greater costs in the longer term.

In this second example I have already jumped ahead to the next part of my theme - to the importance of nursing information and nursing information systems and their relevance to the development of nursing knowledge.

USING INFORMATION SYSTEMS FOR DEVELOPING NURSING KNOWLEDGE

So to return to nursing science or nursing knowledge.

Most sciences have begun with the identification and specification of their "phenomena of concern" through "the naming of parts". Chemistry has its periodic table, astronomy its celestial maps, sociology its key concepts.

In their classic paper which identified a hierarchy of four levels of nursing theory, Dickoff, James and Weidenbach (1968) called this kind of work "factor isolating theory". But long before that Harmer wrote in a nursing textbook in 1926:

It may be emphasised here that if nursing is ever to make even a remote claim to being a science, or even to being conducted on a scientific basis, it must be built up like all branches of sciences; that is by the most careful, unbiased observations and recording of often seemingly trivial details from which - by organising, classifying, analysing, selecting, inferring, drawing and testing conclusions - a body of knowledge or principles are finally evolved.

(Harmer 1926)

But once again, Florence Nightingale had said it first:

For it may safely be said, not that the habit of ready and correct observation will by itself make us useful nurses, but that without it, we shall be useless with all our devotion.... If you find it helps you to note down such things by all means do so.
(Nightingale 1859)

Think back to the case of the pneumonia.

This is one reason why, in spite of the criticisms of medicine and many health care research funders, qualitative methodological approaches are so important in nursing research. It is the qualitative methods which enable us to identify and understand the phenomena between which, perhaps later, quantitative methods may enable us to explain and predict relationships.

There are striking similarities between this approach to building knowledge, and the rapidly developing science of informatics.

I'm going to flash in front of you, because there isn't time to analyse them in detail, three representations of how nurses use knowledge in their clinical decision making, and how that knowledge can be found in and developed through nursing information systems.

The first (Figure 5) is taken from the International Council of Nursing's project (which I have already mentioned) to develop an International Classification for Nursing Practice (ICN 1996)

The spiral shows how the practising nurse in her clinical decision making uses CONCEPTS, which are recorded as TERMS, which can be standardised to form a VOCABULARY or NOMENCLATURE, and CLASSIFIED to allow data to be aggregated within a MINIMUM DATA SET and stored in an INFORMATION SYSTEM (which can of course be used for many purposes including planning and resource allocation). The data recorded by the nurse can subsequently be analysed to produce INFORMATION, and the information interpreted to form KNOWLEDGE, which in turn is fed back into the nurse's practice, and the continuous spiral begins again. Each iteration enables a process of development, refinement and cumulation of knowledge.

The second representation (Figure 6) is a model developed by Graves and Corcoran in the United States, to show how the flow of data, information and knowledge can provide not only clinical decision support but also knowledge building functions for the discipline of nursing (Graves and Corcoran 1988).

Here you can see how research findings, derived from both inductive and deductive research, feed into the knowledge which the nurse uses in her clinical decisions, which she records in the information system, which in turn is used for further research to generate new knowledge.

The third (Figure 7) is the Nursing Information Reference model developed by William Goosen and Paul Epping, two nurse teachers in Holland. (Goosen et al 1996)

It shows not only how the information system supports clinical, management, and policy decisions, but also how the atomic data recorded by the nurse as an integral part of her practice (because it is the basis of her clinical decisions), also constitutes the building blocks of the aggregated data which is required for management and policy decisions.

This kind of research is happening in a number of centres in other countries, but we are a long way behind in the UK. And this is part of the work I want to do here at Swansea, where we already have considerable expertise in health informatics, strengthened greatly recently by the transfer to our department of the Centre For Health Informatics, which was formerly attached to Aberystwyth.

Its relevance is not just that it enables us to develop nursing knowledge, but that it opens up a whole new way of responding to the challenges of clinical effectiveness and to undertaking research in nursing.

In the UK, the main approach to outcome research, what is referred to as the "gold standard", is the randomised controlled trial (RCT). Whatever the strengths of this method - and they are well argued in most of the literature on clinical effectiveness and evidence based practice - they pose major problems for nursing. Quite apart from their conceptual problems (such as the extent to which achieving control in real life situations with real live people is either feasible or ethical), they have major practical disadvantages in that they are by definition prospective, they take a long time (and are therefore expensive), and they can only look at one thing at a time.

A NEW APPROACH TO OUTCOMES RESEARCH

An alternative approach now well developed in the USA by nurse researchers such as Kathleen McCormick at the Agency for Health Care Policy and Research in Washington, Judy Warren at the University of Nebraska (both of whom will be visiting Swansea in the next few months), Suzanne Henry at the University of California San Francisco, Amy Coenen, and Polly Ryan in Milwaukee, and Walter Sermeus and George Evers in Belgium, is to look for patterns and correlations in large sets of patient data which includes not only demographic variables but also variables such as diagnoses and outcomes. Of course this approach is not a perfect solution, not least because the data sets, even in the USA, do not contain all the elements which are significant for nursing.

At present in the UK, where nursing documentation is unstructured and generally of poor quality, where nurses do not use standardised terminology, and we have little by way of clinical information systems, we have little data that we can analyse - and that's part of the work I am trying to develop, for example in Gwent Community NHS Trust which is one of the few places which does have a patient based community information system.

What we need are appropriate information systems which contain those "elements" that I specified and which have been well described in the work of Werley and Lang on the Nursing Minimum Data Set (Werley and Lang 1988), and which structure them in the way shown in these three diagrams.

One of the problems about the way we have developed information systems for healthcare in the UK, is that we start at the top with the aggregates, when we ought to be starting at the bottom with what I have called the elements.

Let me explain what I mean.

Look at this diagram (Figure 7) again.

Policy makers, resource allocators, and managers need, for planning, costing and management purposes, statistical information which is expressed in aggregates or packages. For example the National Casemix Office is responsible for casemix classifications of patient data for managerial, contractual and analytical purposes.

Casemix is the mix of cases, types of patients and types of treatments.

"Healthcare Resource Groups" (HRGs) are grouping of treatment episodes,

and "Health Benefit Groups" (HBGs) are groupings of patients with similar conditions,

By linking the people with the same condition (the HBG) to the activity (the HRG), they say, we can estimate the resources required, the appropriateness of care, the implications of change, and the expected outcome. The National Casemix Office's proposals for Community Healthcare Resource Groups are currently out for consultation. (National Casemix Office 1997)

The people who can most readily supply this data because they are in daily contact with the patients who are its source, are the clinicians (the doctors and nurses). The clinicians, however, want to concentrate on their direct patient care; they resent the time (often quite a lot of time) that they have to spend on collecting data for other people's purposes, and because they resent doing it, they may not even do it very well, so the data itself may be less valid and reliable than the managers would wish. The clinicians - and I'm thinking particularly although not exclusively of community nurses - see the activity of recording this data as a burden imposed by "them up there", from which they get no feedback, and no return.

But clinicians do need information to support the clinical decisions which constitute their daily practice, and they have to record information about their patients and about what they are doing, in order to communicate with colleagues with whom they share the provision of care.

Meanwhile, on the sidelines, are the educators who need information about practice to make their programmes relevant and "fit for purpose", and the researchers who need data to analyse to compare and explain the phenomena and to generate new knowledge.

The different stakeholders have different needs, but the burden of collecting the data always falls on the practitioners.

There is a solution, if only we will use it.

It is:

Collect once only, use many times, for many purposes

The data collected must be atomic, because you can aggregate atomic data into whatever groupings you need, but if the data is collected in grouped form it cannot be disaggregated and re-aggregated in a different way for a different purpose.

The atomic level data includes, of course, what I have described as "the elements of nursing". And nurses do record this data, if not always very well, in their nursing records. If we could improve the precision with which nurses described these elements, as I earlier advocated, and had appropriate documentation or information systems in which the data could be recorded and stored, it would not be difficult to aggregate this data into the "Healthcare Resource groups" and the "Health Benefit Groups" which the National Casemix Office and the purchasers of healthcare need to do their contracting and resource allocation.

Let me give you a scenario as an example.

A health visitor is visiting a family in which there is a toddler aged two years and a baby aged four months. The mother is single but says that she has a new boyfriend who is now living with them. The family moved into the area a month ago and the mother turned up with the two children at a very busy baby clinic. A few days later the health visitor visited them at home, and has decided to visit again today to follow through some of the things there was not time to do last time. She uses a documentation system called the OMAHA system (Martin and Scheet 1992) (so called because it was first developed some twenty years ago by the Visiting Nurses Association of Omaha USA). The system is included in many computerised community nursing information systems in the USA, but let's assume that our health visitor is still using a pencil and paper.

Last time, she identified and recorded a number of issues (potential problems) to which she wished to give some attention, including that the mother said that the baby was not feeding too well, and cried a lot, and that she (the mother) was desperate for a night's sleep. In the checklist of issues, (44 topics grouped into the four Domains of Environmental, Psychosocial, Physiological, and Health-Related Behaviour) the health visitor had marked under Domain IV (Health Related Behaviours):

Problem 1: nutrition (baby)

Problem 2: sleep and rest pattern (mother)

In respect of the baby's feeding, having listened and observed carefully, she had rated the mother's knowledge about infant nutrition at 3 (basic knowledge), and her behaviour at 2 (rarely appropriate). The health visitor had talked about sterilising bottles and mixing feeds, and had given the mother some leaflets to read, recording this as Intervention Category I/21 (health teaching - feeding procedures). But the health visitor had also noted and marked for further assessment several problems or potential problems in Domains I, II, and III, and some of these she now wants to review and assess further on this visit. She asks how the baby's feeding is progressing, and notes that although the mother seems to understand a bit better, her bottle hygiene has not improved: alongside her previous ratings, the health visitor rates health knowledge at 4, and health behaviour at 2. But her real concerns are the issues marked in the other Domains, as yet not fully assessed.

Over the following months, the health visitor can review each of the issues or problems she has identified, which interventions she has used for each, and what the outcomes have been in terms of the client's health status, health knowledge, and health behaviour.

Her data can be aggregated to form part of her caseload profile, compared with that of other health visitors. (provided that they are using the same standardised language), and aggregated with that of other health visitors for management and planning purposes and for casemix data.

But what is currently suggested by the National Casemix Office as what should be recorded by the health visitor, presumably on a special form in addition to her own records, looks like this:

To describe what she has done the health visitor could choose Health Resource Group J: Nutritional Guidance.

In this case she defines what she is doing as:

"interventions designed to promote optimal nutrition, in response to individual needs"

She must categorise the family (Health Benefit Group:) as

Healthy children or

At Risk Children

To describe what she is doing she can choose:

- * Assessment and monitoring
- * Counselling and support for conditions nutritionally linked
- * Health education and advice leading to ability to make choices
- * Health of the Nation targets
- * Special needs eg metabolic disorders

or, she might decide to categorise the visit under HRG E: Parenting/Caring skills:

"interventions to empower and support parent/carers to provide optimum care to their child or dependent"

Unless it's a misprint (and that is another hazard of such approaches to data collection), she must now define the family as:

Health Benefit Group: At Risk Children

And for activities she can choose:

- * assessing the level of existing knowledge, attitudes to and expectations of parenthood/caring
- * techniques of management
- * counselling
- * empowerment

or, she just might use

HRG G: Protection of Individuals or Families At Risk

Once again the family is categorised as:

Health Benefit Group: At Risk Children

And for her activities this time she can choose any of these:

- * specific work with individual/parent/carer/child
- * liaison
- * monitoring
- * working with other agencies
- * case conferences
- * court attendances

It appears that when our health visitor visits a family which has several problems which she must address, she must now categorise the family into one particular Health Benefit Group, and her activity into one particular Health Resource Group. However many activities she undertakes, she may not record more than a limited number.

So in the scenario which I have just given, what data will the health visitor record?

I am not optimistic about the reliability or validity of the data which the National Casemix Office will achieve.

INFORMATION FOR QUALITY CARE

Secondly this kind of data is what is needed for assuring and improving quality in healthcare, for the development of standards, protocols and clinical guidelines.

As WHO has pointed out:

"At present, individual health providers and institutions ... lack the basic information of knowing the quality of care that they provided in daily practice. Such data are not collected and there is thus no feedback in a systematic way to the individual physicians or nurses..."

"A major strategy for improving quality in healthcare must therefore be to establish information systems at clinical level that give feedback to individual providers on the outcomes of the care they give for their patients"

"Introducing a system for measuring outcomes of clinical care in daily practice and feed back of the results must become the first, and indispensable approach to improving clinical care throughout the European region..."

"A dynamic search for better ways forward must come simultaneously from two sources: research and continuous observation of daily practice..."

WHO 1997

NURSING EPIDEMIOLOGY

And thirdly, this kind of data could give us new knowledge in the form of a nursing epidemiology, analogous to medical epidemiology, which we could use for planning, research and many other purposes

A RESEARCH PROGRAMME IN COMMUNITY NURSING

So to the development of a research programme in community nursing here at Swansea.

The framework is simple (Figure 8)

Here in the centre are the many research projects that have already been done, or could be done, to answer a range of research questions. I should be able to show them as a jigsaw puzzle in which each project dovetailed snugly with the next, so that the inner circle was filled with a cumulative body of knowledge. Unfortunately they look more like a mixture of triangles, squares, and all sorts of shapes, which do not fit together, so in spite of all the effort that has gone into them, we still do not have the cumulation of knowledge that we need.

One of the reasons that they do not fit together is that they cannot be compared, because they have not described the phenomena that they have investigated in the same way. Remember the case of the pneumonia and the antibiotic?

In our case we may have nurse researchers in Swansea studying the problem of incontinence, but they cannot link their work to that of nurses in, let's say this time, Sweden, or even to work that was done in Swansea five years ago, because they may not be talking about the same thing. They do not use any standardised terminology, so they do not even know whether they are talking about the same things or not.

So the middle circle represents the work to be done on the development of standardised languages for nursing, including the ICNP project which I have already described, but including also the work which needs to be done to develop and test the standardised language for healthcare which is being developed here in the UK in the form of the Read Codes (NHS CCC 1995). This is already widely used in general practice and will soon be the standard language for all NHS information systems. These two languages, and those that already exist or are developing in other countries, (I mentioned earlier the NANDA taxonomy) need to be carefully crossmapped, and probably incorporated into the Unified Medical Language System which is being developed by the US National Library of Medicine in Washington.

And the outer circle represents the integrated clinical information systems in which data is not just collected and stored, but can be converted to information which is fed back to the clinician to improve his or her clinical decisions and to generate, as those three diagrams showed, nursing knowledge.

If you start at the outer circle and work inwards, you get "what I really really want": (Spice Girls 1997)

I would like to find a site - a general practice, or a locality within a community trust perhaps, and establish a demonstration project.

The project would develop and implement a nursing information system which could be used by all the nurses in the primary health care team (employed and attached) to record their work with patients. The nurses would use a standardised language (Read coded) to record their nursing diagnoses, nursing interventions, and nursing-sensitive health outcomes, in every encounter with a patient.

Of course the proposal would be greatly strengthened if it could be extended to a multidisciplinary system used by all members of the primary health care team, and in any case it would be essential that the system interfaces with whatever system is currently in use in the practice for the recording of patient data. The system, and the interface would of course be password protected and would meet all the requirements for confidentiality and data protection.

The project would provide a "test-bed" which would enable a range of research and development projects. Just think what we could do:

We would accumulate over time a database which could be interrogated to support:
studies of specific nursing diagnoses and nursing interventions;

the development of a "nursing epidemiology": a profile of the nursing diagnoses/ patient problems in a defined (practice) population;

identification and measurement of health outcomes;

exploration of linkages between nursing interventions and health outcomes;

identification of differences in the interventions of different kinds of nurses for the same conditions or with the same patients; (skill mix);

individualised self-monitoring of decisions, activities, and performance; (audit);

development of decision support systems for care planning and clinical pathways.

We could explore the implications, processes, and requirements for introducing such a system in a general practice setting, to prepare for implementation on a wider scale.

We could validate and crossmap available standardised nursing languages and classification systems;

And we could undertake aggregation of point-of-care clinical data to provide epidemiological and management information, including the basis for contracting currency;

In the words of the song: "Oh wouldn't it be luvly" - (My Fair Lady)

In fact I'm already working on it, in collaboration with colleagues such as Adrian Saville of the Centre for Health Informatics and Professor John Williams at the School of Postgraduate Studies Medicine. What we need is a site with people who are keen to try it, and funding.

CONCLUSION

This way of looking at nursing and nursing research is not what you might have expected. It certainly does not conform to traditional stereotypes.

But the world of healthcare is changing fast - maybe as the Queen recently complained -- too fast for us older people to keep up with.

I'd like to end with something I found recently in a Canadian Nursing journal, about what nursing might be like in the year 2020 - not a million years away, but well within the career span of the nurses whom we are preparing here in Swansea right now.

At first you may think it belongs more in the field of science fiction, but there is in fact nothing in it that is not already in use or under development. For me it encapsulates the new way of understanding nursing which I believe is absolutely essential if nursing is to achieve its potential for contributing to Health for all after the year 2000.

"The computer gently hums to life as community health specialist Rachel Muhammad logs into NurseNet. She asks a research partner, a cyberware specialist in London, England, for the results from a trial on neurological side effects of ocular biochips. Rachel, as part of a 61 member research team in 23 countries, is studying six clients with the chips. Then it's down to local business. Rachel e-mails information on air contaminant syndrome to a client down the street whose son is susceptible to the condition, and tells her about a support group in Philadelphia. She contacts a Quigong specialist to see if he can teach the boy breathing exercises, and schedules an appointment with an environmental nurse specialist. Moments before her 9.45 appointment, Rachel gets into her El-van and programs it to an address two kilometres away. Her patient, Mr. Chan, lost both legs in a subway accident and needs to be prepared for a bionic double leg transplant. Together they assess his needs and put together a team of health workers: surgeon, physiotherapist, acupuncturist, and home care helpers. She talks to him about the transplant; they hook up to his virtual reality computer to see and talk to another client who underwent the same procedure. Before leaving, Mr Chan grasps her hand and thanks her for helping him. Rachel hugs him and urges him to e-mail her if he has any more questions"

(Sibbald 1995)

First, notice that Rachel is a community nurse. It is now a truism to say that the future of health care is primary health care, and that primary health care is nursing. One of my dreams for nursing education in the 21st century is that basic preparation for nursing should be based entirely on community nursing and primary health care; nursing in acute general hospitals should become a post-basic specialty. That debate is for another day, but as a Professor of Community Nursing, I know I'm in the right job.

Secondly, Rachel's nursing practice depends through and through on the use of information. She uses information and she generates knowledge. The information super-highway will bring a fundamental change in health care delivery: from a system driven by the provider to one driven by the consumer.

In future, since every client, like Mr. Chan, will, through systems such as the Internet, have access to all kinds of information, much of the mystique of medicine and the power base of traditional professional practice will disappear. But to become useful, information requires interpretation, and in the future I see the nurse as a knowledge broker for every patient and client, using her teaching and advocacy skills to help people to access the health information

they need, and to decide how to use it. Nurses will, in addition to teaching them about their disease, provide information about specialists, resources, and alternative treatments.

To achieve this they also need knowledge. Nurses' broad knowledge about all aspects of health care will be a priceless resource for enabling people to make decisions about their health.

Technology provides access to knowledge: Rachel uses NurseNet as a resource. In future, the difference between the expert and the novice will lie less in the knowledge they already have than in knowing where to look for information and how to use it. Nurses, and consumers, will have at their fingertips immediate access to research results and publications on-line; the terms "research based practice", or "evidence based practice" will take on a whole new meaning.

They will also need highly developed listening, communication and teaching skills, and a clear understanding of the values and ethical principles on which such choices will be based.

But finally, notice the last part of the vignette. Mr Chan grasps Rachel's hand and Rachel hugs him.

The core of nursing practice is not the ability to measure vital signs, administer medication, dress wounds, or manage complicated machines. It does not lie in our technical skills, many of which will be as obsolete in five years time as some of the skills I learnt as a student nurse thirty years ago. It does not lie solely in our empathy or caring approach to people, for there are many others who can equal that claim. It lies in our ability to diagnose and deal with human responses to illness, frailty, disability, life transitions, and other actual or potential threats to health, and to do so within a relationship of trust and care that promotes health and healing.

Nursing is now, and will be more than ever in the future, not just a matter of a collection of tasks which anyone with a little training can perform at an acceptable level of competence.

Of course nursing requires technical competence and a gentle touch. But it is much, much more.

- * Nursing is an intellectual activity because it involves clinical decision making -- diagnostic and therapeutic decisions made on the best and most up to date knowledge available.
- * It is an emotional activity, because it requires the practitioner to share the patient's experience, and to work in partnership on agreed goals.
- * It is a moral activity because it depends on a relationship of trust, in an environment where choices and decisions do not depend solely on scientific knowledge.
- * and it is a political activity because it involves the allocation of scarce resources in situations where demand may not equate with need and may exceed supply.

All of these draw on the nursing knowledge that is "embedded in clinical practice. (Benner 1984)

Nursing must now take on the responsibility, as it is doing here at the University of Wales, Swansea, to develop its knowledge base (its science), and take its place as a scientific, as well as a practice, discipline.

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FIGURES

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Fig 1: Generalised Outcome Model

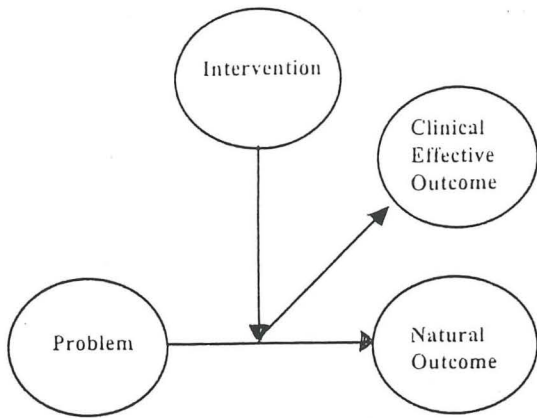


Fig 2: Medical Outcome Model

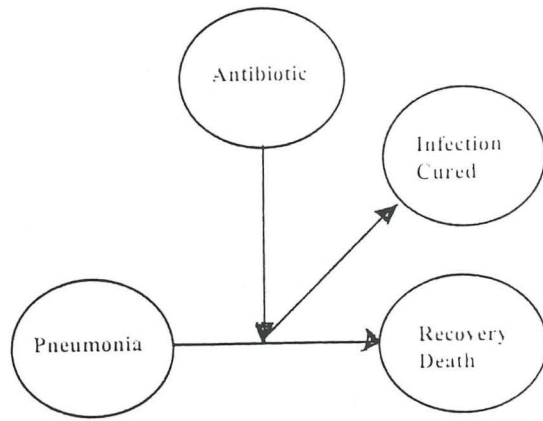


Fig 3: Nursing Outcome Model

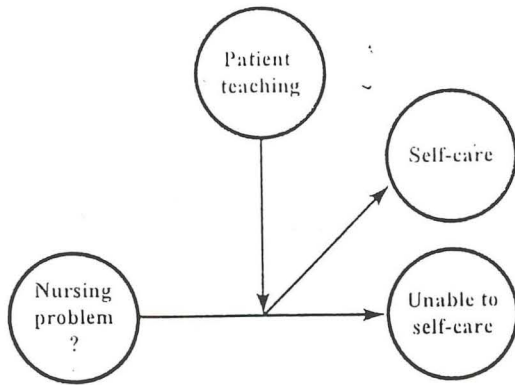


Fig 4: The Interaction of Diagnoses, Interventions and Outcomes

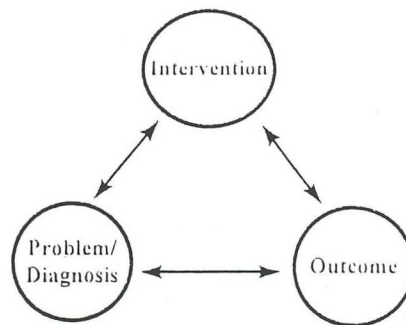


Fig 5: The ICNP Spiral

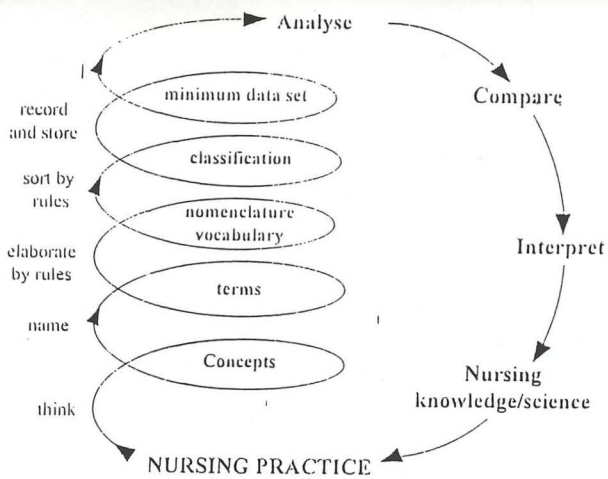


Fig 7: The Nursing Information Reference Model - Epping and Goosen 1997

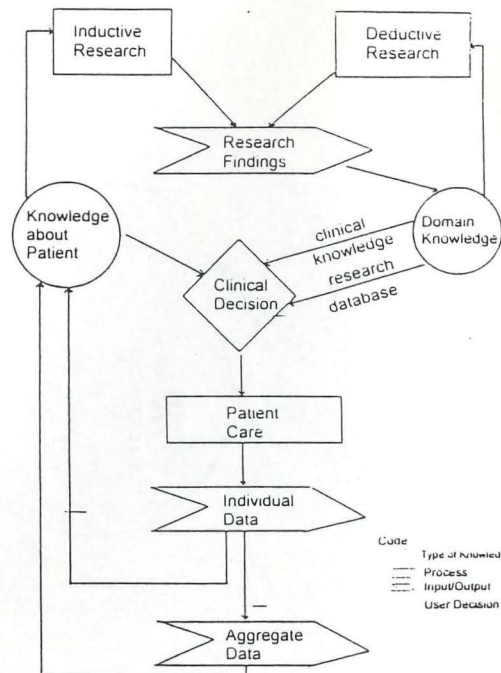
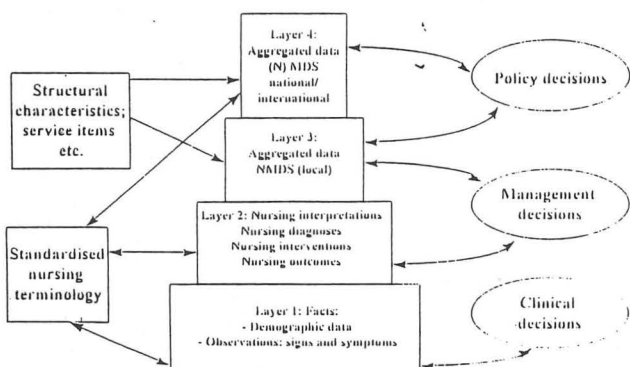
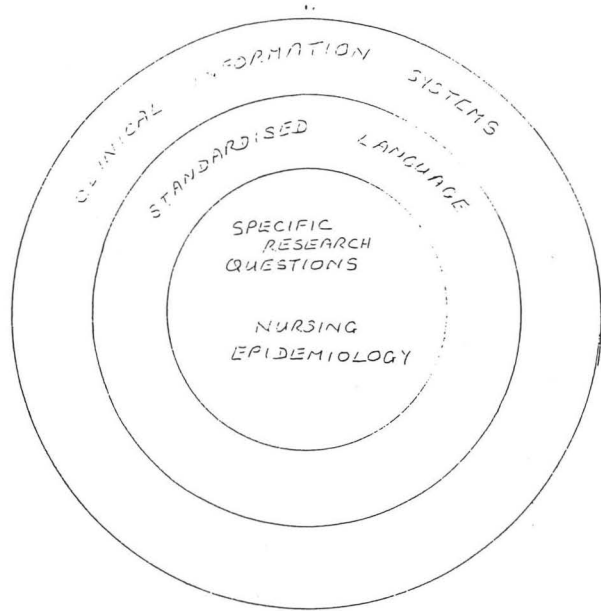


Fig 6: Sources and flow of knowledge for clinical practice Graves and Corclan 1988 (adopted)

Figure 8:-

**A Framework for a Research Programme
in Community Nursing**



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