Primary Care Practice by Default or by Design:
Case Study of a Physician

by

Verlé M. Harrop

B.Sc. Occupational Therapy
University of Toronto, 1975

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signature of the author:_____
Department of Architecture
May 8th, 1998

certified by:_____
William L. Porter
Norman B. and Muriel Leventhal Professor of Architecture and Planning
Thesis Supervisor

accepted by:_____
Roy Strickland
Associate Professor of Architecture
Chairman, Department Committee on Graduate Students

JUN 1 7 1998

Rotch

READERS

reader   Martin Rein
Professor of Urban Studies & Planning

reader   Dr. Lucila Ohno-Machado
Harvard School of Public Health

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ABSTRACT

Dr. Meaford, a prominent internist in a PMO ambulatory unit says that he is overwhelmed by his medical practice. He attributes the state of being overwhelmed to the fact that he is unable to implement systems of support for his practice that he has designed. The thesis starts with an overview of the systems of support in Dr. Meaford's primary care practice. In doing so identifiable default practice patterns emerged. In the process of fleshing out a context for those patterns it became apparent that organizational policy can either stress or support medical practice. In Terence Meaford's case it was very much the former. What constituted a practice-specific, workflow-based system of support for him did not constitute a support priority for the organization. This is essentially why his implementations of support for his practice failed.

In the process of coming to this realisation, it seemed obvious to ask how much more successful a system implementation might be if it were coming from "the top down". To that end we looked at what might transpire when the PMO attempts to implement its system of support, the integrated electronic medical record system. It soon became obvious that there was a profound conflict of frames of reference: ABMII supports primary care practice: Meta Systems supports managed care business. The only place where the two frames of reference intersect is efficiency. If Terence can improve the efficiency of his practice he won't be so overwhelmed: If the organization can improve his efficiency then he will be able to increase his panel size and generate more revenue.

The implementation of these electronic medical record systems signals the end of an era in healthcare: Meta Systems confirms the supremacy of organizational values right down to the essence of medical practice itself the physician-patient encounter. Jane Jacobs, in her 1992 book, "Systems of Survival A Dialogue on the Moral Foundations of Commerce and Politics", lays out 2 value systems: the guardian syndrome (Dr. Terence Meaford) and the commercial syndrome (Healthright Plus the PMO). Her point is that the espoused self interests of these two groups will always be in conflict because their value systems are antithetical. In her analysis however, there is no mention of the role that technology plays in wrestling these two to the mat. I propose that technology could be the "zipper" that pulls these two sides together and that input at every level to the policy governing this technology is absolutely essential if quality of care is to remain a priority for the practice of medicine.

Thesis Advisor
William L. Porter

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DEDICATION
to the women in the family, past, present and future

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1 INTRODUCTION

This is a case study of Dr. Terence Meaford, a primary care physician working in a health maintenance organization ambulatory care unit located in a large city in the North Eastern part of the United States. My original intent had been to focus specifically on the subject's medical practice but I soon found that in order to understand the dynamics of the physician's practice I had to also familiarise myself with the health maintenance organization (HMO) where he was employed. To this end the case study includes enough information on the HMO to allow us to toggle comfortably back and forth between the physician and the organization within which his practice is embedded.

This case study breaks down into the following main areas:

1) - An examination at the ground level of how changes in policy enacted by the Health Maintenance Organization (and subsequently the Physician Management Organization) support the administration's business but place stress on the physician's practice.

2) - The discovery that policy becomes a problem for practice at the point of its implementation.

3) - The uncovering of conflicting frames of reference around the issues of implementation: what constitutes a system of support for Dr. Meaford does not constitute a system of support for the organization.

4) - The outlining of "implementation readiness" design criteria.

2 RESEARCH QUESTION

The initial research question "How would you redesign the practice of a primary care physician?" arose directly from Dr. Meaford saying that he was overwhelmed by his practice and that the reason for being so was directly attributable to the lack of support for his practice. "My goals certainly would be to get the patients' messages sooner, not to be so exhausted at the end of the day and take home so much work, not to run so late all the time, just to have the practice run the way it's never run for me. I have no question that in a lot of this I'm my own worst enemy." In the Process Architecture tradition I immediately began to ask myself: "How do you redesign the practice of a primary care physician working in a managed care ambulatory care setting? Is it a collaborative redesign process and if so whom does it involve? What steps does this redesign process entail? How do you isolate the design elements specific to a single medical practice and once you have isolated these design elements, what are your criteria for redesign? What do you scrap and what do you build on? How do you prioritise needs: the organization's, the patient's, administration's, the physician's and support staff's? How do evaluate the ways in which organizational restructuring and incoming medical informatics technologies are reconfiguring job descriptions, work flow and the physical workplace? How do you assess the practice of the primary care physician for change? Can

a dynamic posture for change be one of the elements of redesign? How will changes be implemented and sustained and how do these factors themselves shape the design parameters or limit design possibilities? Can the learning experience of the medical residents be designed to also enhance the practice of the physicians? Could the residents in fact be "carriers" of new technology? And finally, how can you get a custom fit between the physician, organization, and technologies that ensures the maximum benefit for all concerned?" This is not where I ended up. The unexpected discovery that this 55 year old Harvard Medical School graduate had in fact already redesigned meticulous systems of support, for his practice but had repeatedly failed at getting them implemented made me revise my line of inquiry.

The questions then became:

1) "Why is the issue of "implementation of support systems" for this by all accounts "outstanding" physician falling through the cracks in this managed care environment?,
2) What was preventing his "systems of support" from being implemented?, and
3) Were the barriers to "implementation of systems of support" that Dr. Meaford experienced in his daily practice scalable? The care unit where Dr. Meaford practised, was slated to roll out Meta Systems, an integrated Electronic Medical Record (EMR) system late in 1999. Discourse in his care unit centred around anticipated obstacles to implementation of the EMR. Being party to these conversations sensitised me to the fact that maybe there was a relationship between Dr. Meaford's failure to implement his own systems of support and the anticipated difficulties implementing this incoming system of support, Meta Systems. These were the questions that then directed my line of inquiry.

3 PRECEDENTS

A great deal has been written about the implementation of support systems: Clinical Information Systems (Clayton 1994), Hospital Information Systems (Mazzoleni 1996), the Electronic Medical Record (Arias-Vimarland 1996), Physician Order Entry Applications (Weir 1995) and Electronic Clinical Guidelines (Lobach 1995), (Tierney 1996), (Berg 1997). By way of contrast, very little has been written about the role of the environments, the human systems of support into which these electronic systems of support are introduced. There are oblique references to the potential impediments to implementation embedded in these human environments when research focuses on "physician resistance" to the use of these technologies (Valenta & Wigger 1996). These researchers cite organizational policy development (Weir 1995) and the fact that implementation is intertwined with continuing system development and modification (Aydin 1994), as potential human challenges to be taken into account in the implementation stage.

However, the drawback of much of the research on physician implementation rests with the assumption that physician implementation exists in isolation, when in fact, critical factors regarding implementation reside with, for example, the receptionist who books the patients in, or the MA or registered nurse who readies the actual physician-patient interface. Critical data on the patient is entered by the support staff and if the quality and validity of that information is not consistent, ie: the human system of support fails to support the electronic system of support, both of which the physician is depending on, it can have a profound affect on the physician's reported satisfaction with the technology itself (Dewey 1994), (Arias-Vimarland 1996).

To date there is a body of literature describing needs-based requirements for designing and evaluating information systems (Abendroth 1992, 1994), (Tang 1991, 1992, 1994), (Einbinder 1996). And in keeping with the tenets of Process Architecture there are also two fledgling bodies of related literature: 1) on Participatory Design of Computer-Supported Organizational Learning in health care, which recognizes that the organizational infrastructure has to be identified and the system positioned within it. (Timpka 1995), and 2) on Cooperative Workstations, which points out that although computers have enhanced individual productivity, they seem to have failed to support the cooperative environment to which they have been applied (Beuscart 1996). At present however, there is not a body of literature delving into the level of functionality of existing systems of medical support, nor using this level of functionality as an indicator for success or failure of implementation of information technologies in primary care practice. Neither does the body of literature examine whether these incoming technologies are designed primarily as systems of support for the primary care physicians or as systems of support for the health maintenance organisations. The question arises: how can support system implementation succeed if the individual and organisational frames of reference are fundamentally at conflict? The in-depth idiographic research presented here is designed to contribute to these areas of systems implementation research, by broadening our definition and understanding of the workings of the systems of support in a specific primary care environment.

The research documented in this thesis is a case study of a single subject and the methodology qualitative. The value of this work lies in the richness and candour of the information contributed by this single physician and his co-workers, and its potential as a resource for those designing human interface implementation protocols for medical informatics technologies in primary care ambulatory units.

4 "UNIVERSE OF ONE"

Dr. Meaford presented as an ideal candidate for the "universe of one" approach to design inquiry. Donald Schön in his book "The Reflective Practitioner: How Professionals Think in Action",(1982) draws parallel's between the "processes" practised by architects and and those practised by psychotherapists. He points out that for example, "some practitioners (psychotherapists) share a disposition to regard the patient as a

unique case ----- in Eric Erickson's words, "a universe of one." These practitioners, however much they may differ from one another in language and technique, share an approach to therapy that distinguishes them from those who regard patients as examples of standard diagnostic categories. Schön goes on to say that the practitioners of "the unique case" are of special interest from the point of view of the study of reflection-in-action. It is this process of reflection -in-action that forms the fundamental building block of Process Architecture (Horgen, Joroff, Porter, Schön,1998), Science Research and Organizational Learning (Argyris, 1992), (Argyris and Schön, 1996) and Fuzzy Management (Grint, 1997) all of which have been heavily borrowed from to form the methodology for this research.

In this case study, Dr. Meaford is my "universe of one". In stating this I am not suggesting that we launched into a psychotherapeutic relationship, but rather that the instrumentation of Schön's "Reflective Research" methodology facilitated a mutual line of inquiry between Dr. Meaford and myself, "a reflective conversation with a unique and uncertain situation." As Schön frames it up, "in this reflective conversation, the practitioner's (our) effort to solve the (framed and) reframed problem yields new discoveries which call for new reflection-in-action. The process spirals through stages of appreciation, action, and re appreciation. The unique and uncertain situation comes to be understood through the attempt to change it, and changed through the attempt to understand it." (Schön 1982) This was the implicit process that Dr. Meaford and I embarked on.

5 RESEARCH METHODOLOGY

The bulk of the research for this case study was carried out over a 7-month period from October 1997 - May 1998. This time frame allowed me to establish relationships of trust with Dr. Meaford and his support staff and to understand the ongoing long-term tensions, supports and negotiations that constitute the fabric of everyday life in the department and to a certain extent life in the organization. As a Canadian, coming from a National Health system it also afforded me the opportunity to learn about American health care from the ground up and from the inside out.

My "reflective research" agenda was twofold: I wanted to enter into the fabric of Dr. Meaford's practice but I also wanted to subject it to a stress test. The test entailed the design and implementation of a modest intervention namely, the collaborative process of assessing, designing and implementing incremental interventions for stocking Dr. Meaford's examing rooms. This intervention ran the length of the the 7 month research period. Aside from fulfilling the very practical function of creating a system for maintaining a well-stocked examining room, this intervention was developed as a tool for assessing the conditions for implementation of functional systems of support. And running in the background was the drive to see if the difficulties implementing support systems at the individual level might have any relevance for the implementation of the incoming electronic medical record Meta Systems.

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My modus operandi included ongoing sessions of participatory observation, observation, and repeated structured and unstructured interviews. Data was captured on audio tape, in drawings and extensive field notes. I spent time with anyone who came into contact with Dr. Meaford's practice: his colleagues, administration, support staff, patients, and wife. I tracked and recorded Dr. Meaford's every move including regular and urgent care sessions at the clinic and even what work he took home and where and when he tackled it when he got there.

No detail was too small to attend to. When Dr. Meaford said he felt that I "was seeing the dirt under his fingernails", I could only respond by saying "the more there was to see, the more there was to like." Such was my personal bias, my "positioned approach"(Kleinman 1995).

6 THESIS OVERVIEW

Section 1   Dr. Terence Meaford's Systems of Support

In the first section we profile the systems of support that Terence says are inadequate or all together lacking in his practice. Terence himself has designed systems that he feels would adequately support his practice but to date he has been unable to implement them. These systems are embodied in his Ready To Act (RTA) protocols. We will examine in detail the specific RTA protocol of the "blue slips'. In the course of analyzing why implementation of his systems of support failed, identifiable "default patterns" of behaviour start to emerge. These are made manifest by Terence, his support staff and the department as a whole. It is at this point that we begin to see the importance of situating Terence's local problems within the context of the organization. In the final analysis we come to appreciate the relationship between policy and practice from Terence's perspective, that of the primary care practitioner. More importantly we determine that it is at this point of implementation that policy and practice come into conflict. Issues around implementation are examined in section 2.

Section 2   The "Stocking the Examining Room" Intervention

The "Stocking the Examing Room" Intervention was designed as an investigation into why Terence was unable to implement his RTA Protocols. This section covers the background to the intervention, the design, the running of the intervention, the tools that were designed to expedite the implementation process, and finally the analysis, which centers on the conflicting frames of reference and how they appear to impact directly on the success or failure of support systems. The ramifications of these conflicting frames of reference (CFR) gives us pause for thought. If the CFR come into play at the level of the implementations in the individual practice, how might they also come into play in implementations at an organizational level?

Section 3   When the Rubber Meets the Road

Unfortunately we can't study the implementation of Meta Systems, the integrated Electronic Medical Record to see if CFR effect implementation because it is not slated for "roll out" until late 1999. In the interim however we will survey Terence's perceptions of how Meta Systems will impact on his present systems of support and practice. We will then zoom in on one aspect of the electronic medical record "charting": as it presently is in ABMII, and now it will be with the incoming EMR Meta Systems. In the process of carrying out a comparative analysis of charting the patient encounter within the two systems we clearly uncover the conflicting frames of reference: ABMII supports primary care practice, while Meta Systems supports managed care business. The one important place where the two frames intersect is "efficiency". From the doctor's point of view: If Terence can improve the efficiency of his practice he won't be so overwhelmed and won't take so much work home. From the HMO's point of view: If the organization can improve his efficiency then he will be able to increase his panel size and bring in more revenue.

Section 4   Implementation Readiness Design Criteria

It is the end of another era in health care. As Terence says "It's (Meta Systems) big and it's inevitable". It appears that the only recourse a primary care physician has is to prepare for it. To that end the thesis concludes with a list of implementation readiness design criteria. These will become starting points for further research.

SECTION 1
7 AN OVERVIEW OF THE SYSTEMS OF SUPPORT IN DR. MEAFORD'S PRACTICE

Following is an in-depth overview of Dr. Meaford's primary care practice. Dr. Meaford says that he is "chronically overwhelmed" by his medical practice. Furthermore he attributes this state of being overwhelmed to the fact that he doesn't get enough support. This chapter is presented primarily from Terence's perspective but from time to time it is tempered by that of the unit administrator, the clinical manager, the MA supervisors and the MA's themselves. The initial purpose is to confirm that there is indeed a problem. Additionally I want to examine as many dimensions of the problem as possible. I anticipate that the presence of the problem will be confirmed, but that the problem extends well beyond the immediate support needs of Dr. Meaford. Running in the background is a classic example of the clash between policy and practice. Policy either supports practice or it puts stress on it. This is the lens through which the material will be analysed at the end of the chapter.

SOS as an analytical unit

In order to make sense of this very complex environment, I use the term "system of support" or "support system" as a descriptive and analytical device. As will be seen, every aspect of his practice can be described as a system of support: his staff, the technology, the architecture etcetera. There were 3 reasons justifying this device:

1) it was an effective means of breaking down the the environment into manageable chunks that related specifically to his expressed problem: "not having enough support for his practice"
2) the systems of support could be teased apart and looked at individually or they could be nested one within each other or even bundled as aggregates. In this respect the analytical device facilitated looking at Terence's practice within the broader context of the organization
3) in mapping out these systems of support I realized that I was also in effect mapping out the power dynamics within Terence's practice and the organization. To this end it proved most useful. In terms of precedents for this descriptive and analytical reference, I have not come across any. The closest to it that many are familiar with is the use of the term "networks". The difference between "systems of support" and "networks" is that the former has this added dimension of delineating the pathways of control ergo power.

Before we embark on a cross-section of the current systems of support for Terence's practice we will take a quick look at a thumbnail sketches of Terence and the organization that he works for.

thumbnail sketch: Dr. Terence Meaford

Dr. Terence Meaford is a 55 year old board-certified internist who graduated from Harvard Medical School. He joined Healthright in 1974 and has worked for an arm of the organization ever since. Presently he is working in a staff-modeled internal medicine department in an ambulatory care unit which opened 8 years ago. The Huron Health care unit is located on a main artery adjacent to a shopping malls in a 3 story renovated stone building which backs onto a ravine. The department that he works in was physically split

into two Internal Medicine departments, Internal Medicine A (IMA) and Internal Medicine B (IMB) because it had to expand around the Department of Obstetrics and Gynaecology which lies in the middle. His practice is run out of IMB. In October of 1997 there were 2 teams of 2 physicians in each department. He shared an up MA and a down MA with one other clinician. All 4 clinicians in IMB share 1 Nurse Practitioner and 1 receptionist.

thumbnail sketch: the organization

There are two processes going on within the organization where Dr. Meaford works that should be highlighted here because of their impact on his present practice.The first is the fact that during the time this research was being carried out, the organization was changing over from a Health Management Organization to a Physicians Management Organization (with all the financial implications of doing so), and secondly the organization was in the process of implementing a new integrated electronic medical record system in all 9 of its health care units.

The care unit where Dr. Meaford practices is one of 9 Healthright Plus Medical Associates units located in the greater Boston metropolitan area. Prior to April 1st,1998 these 9 centers were part of Healthright's Health Care Division. While under Healthright, the 9 Health Care Division Centers elected to reconfigure as a physician management organization run by clinicians not administrators. As of April 1998 the 9 centers are a separate, non-profit, clinician-led medical group. However, Healthright Plus Medical Associates are still affiliated with Healthright. Going from an HMO to a PMO has critical financial ramifications. Prior to April 1, 1998, Healthright had an exclusive contract with Huron Health Center to service only persons registered with the Healthright plan the caveat being that Healthright provided the unit with patients or in lieu of patients, monies. Under the new organizational arrangement starting April 1st 1998, this arrangement is no longer in place, and consequently all 9 Healthright Plus Centers will be accepting members from outside the Healthright. There is significant pressure now on all 9 of the care units to be financially self supporting. For some time now the Huron care unit has been losing members. It is struggling financially and presently it is being carried by the more productive units in Healthright Plus.

Added to the stress of these organizational changes is the fact that the organization is implementing an integrated electronic medical record system call Meta Systems in all 9 of its health care units. This is a decision that was made by Healthright and is being rolled out from their central office. The care unit where Terence works already has an electronic medical record which they use for scheduling and charting. The new system being implemented has scheduling, charting and most importantly billing capabilities. One of the primary reasons for the new data base is to be able to manage the financial business of the organization. The care unit where Terence works will be the last center to have the EMR rolled out.

timeframe and source of the research material

The "cross-section" through Terence's practice was taken at the end of December 1997 just prior to radical changes in the Department of Internal Medicine and the organization as a whole. When the

outcome of these changes is relevant but not essential to the point I am making, it will be footnoted. Source material for this chapter was derived from interviews, shadowing sessions and participatory observation sessions carried out by the author in IMB in the time period spanning October 1997 to May 1998[1] . This material was augmented further by interviews with Dr. Meaford carried out by Turid Horgen February.- May 1997, and from shadowing and participatory observation sessions carried out by the author during this same time period.

7.1 background to the problem

chronically overwhelmed

Dr. Meaford's primary complaint is that he is overwhelmed. 'It's my particular personality that I periodically feel that that's okay, that I get kind of excited or stimulated by it. I do enjoy my patients. I think, "well it will never be any different but hell, this is a good life and I like what I do. But it always seems like there's overwhelming volume, not only the patients that I see and the complexity that they have, but I generate as much work outside the session as I experience inside the session. A 4 hour session really costs me 8 hours."

the workload

Dr Meaford is overwhelmed in part by the sheer workload. He works 21 clinical hours a week which constitutes 3/4 time, but he frequently extends his sessions by booking additional appointments before and after his designated sessions. In December of 1997 the maximum number of hours any physician in the Department of Internal Medicine practices amounts to 3/4 time. In addition to his clinical sessions Dr. Meaford does rounding at 2 hospitals if his patients are interned, and attends Friday noon hour Internal Medicine Departmental staff meetings. For every hour of clinical practice, Terence estimates an additional hour of work attending to phone calls and paperwork generated by encounters, nursing home requests or administrative duties. Terence follows up each session with approximately 75 minutes of phone calls and at least 1 hour of paperwork at home in the evening. He also devotes Thursday mornings to these duties.

In addition to his practice, Dr. Meaford is an active member on the Board of Trustees for Healthright Plus which is orchestrating the transition of 9 former Healthright Division Centers to 9 physician-run centers. Healthright Plus is slated to unfold April 1st, 1998. Dr. Meaford estimates that he spends at least 8-10 hours a week on Healthright Plus board-related matters. In addition to these responsibilities, he has commitments relating to the Partners in Care, an organization whose mandate is to provide health services to the homeless which he started 8 years ago out of the Huron Center. Partners in Care requires approximately 5 hours of attention a week.

profile of Dr. Meaford's patient panel

Dr. Meaford's practice profile differ significantly from the other practice profiles in the department of internal medicine specifically in terms of the age and stability. Dr. Meaford's member panel consists primarily of "elderly, socially disadvantaged members with complex health problems". 50% of his panel members are over 50 years of age, 30% are between the ages of 40 and 50 and the remaining 20 % are under 40 years of age. The distribution of age groups in Dr. Meaford's panel is the complete reverse of the distribution of age groups of his former partner's member panel: 80% of her panel were under 40 years of age: 80% of Dr. Meaford's panel are over 40 years of age. Dr. Meaford's is the only practice to have 1:1 ratio of males to females.

The average age and attendant complexity of the health problems of Dr. Meaford's panel is reflected in the number of days that it takes to book an appointment: a 22 day wait for a short visit (15 minutes) and a 60 day wait for a long visit (30 minutes). The waiting period for a long visit with Dr. Meaford is 3 times longer than it is for the other male primary care physician with a larger panel size but holding a comparable number of clinical hours. This data implies that because of their age and the complexity of their health problems, Dr. Meaford's patients require longer appointment times.

In the first quarter of 1997 Dr. Meaford and his team had the highest scores for 'members seen by their own MD or a team member when seen in Internal Medicine'. Dr. Meaford treated 63% of his own patients and his team fielded 87% of his panel member's visits. To put this in perspective, his colleague who came closest to this level of performance saw 49% of her own patients and her team saw 80%. In the first quarter of 1997 Dr. Meaford averaged 103 encounters a week. The physicians with the next highest score had 89 encounters.

the panel is adjusted for sex, age, and case severity

The administrator for the center said, " the general thought is that one full time clinician should be able to support 1800 age/sex adjusted members. 1,800 to 1,850, could be close to 2,000. 1,800 is assuming no Nurse Practitioner" (Terence presently has the support of 1/4 of the IMB NP's time). Terence has approximately 1,345 members in his panel, but his panel is adjusted for age, sex and case mix severity by approximately 18%. This means that in reality he has approximately 1,136 patients in his panel but with the 18% adjustment he is accredited with the treatment of an additional approximately 209 patients. There is ongoing discussion about whether or not Dr. Meaford's panel is open or closed. Although administration has declared his panel officially closed because of lack of access, Dr. Meaford has the final say on whether a patient is to be admitted to his panel.

When you ask Dr. Meaford's peers how they would describe his practice style the response it, "They don't make them like Terence any more." The support staff and administration are more explicit: "His patients know that when they go in that room and shut the door, they know they're going to get what they need. They are going to get the time that the need, they are going to get the care that they need, that he's going

to listen, he's not going to interrupt, he's not going to look at his watch. And I think that's why his practice is so hard to manage but that's what makes him so wonderful"....."I think that it's true of the world that there's a lot of folks that need to be heard, and that he finds that to be incredibly gratifying, and more importantly that's his mission, that's his job, to care for people, and so that may be in the manipulative physical laying on of hands, but I think he really believes that his job is to hear people, to listen to what their concerns are, and to truly care about alleviating them and honouring them." Terence's practice style is reflected in what he gets out of it. "Well, I love my patients. I love what happens when I close the door and sit down with the patient one-on-one and shut out the noise and the hub bub. Some of these patients I've known for many years now, some even as long as when I started my practice which was 25 years ago, a good many others from when I started my Huron practice which is nearly 10 years ago. I enjoy then as people. I enjoy entering their lives for a few minutes. It definitely is what nourishes me...".

When Terence shuts out the noise and the hubbub he also shuts out the schedule. It is not uncommon for him to be running an hour behind. During the course of casual conversation with the patients they frequently reported that they expect and are prepared to wait because of the quality of the personal contact and thoroughness of the physician-patient encounter: The medical supervisor confirmed this, "When Terence's patients come in all they ask is that they be kept informed, running 1/2 or 45 minutes, an hour behind, they'll pace themselves. People who know him and love him and who have had his warm touch, they'll wait, they'll wait".

Terence is the first to admit that there are problems with his practice style: "I've come to a lot of ways of doing things that I think may be dysfunctional, but I guess I'm not thoroughly convinced that they're dysfunctional." The clinical manager suggests that practice style might be part of the problem, but added to the mix is the amount of work that Terence takes on and what people expect from him: "But given the fact that he has taken on this huge responsibility with the board, he still is caring for the poorest of the poor in the community by working through the Partners in Care, he's got all sorts of different offshoots and committees that he's supposed to be at, and the expectation is "call Terence". And he's a fabulous guy and he truly is the walking, breathing embodiment of what this organization is about. He has not become jaded, he has not lost his sense of why, his mission, his purpose. So people want a piece of him all the time, and so I believe that he feels overwhelmed."

the problem from Terence's point of view
According to Terence, implementation is at the root of the problem: "The reality is that there's a whole range of things that I have asked for over the years that I've asked for repeatedly and I've asked for clearly and I've asked for consistently. I don't get them for very long. When I meet with everybody and I say this is what I want to have and I've written some things out, the die-away curve of my actually obtaining those things is striking. " ... "It's not that I have no clear idea of what I want done. It's that I have no clear idea how to get other people to do it for me."

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the problem from the support staff's point of view

The staff have a different point of view on support for Terence's practice. Although the support staff in IMB speak very highly of Dr. Meaford as a person, they cite his practice as being almost impossible to support:

- •"he is so disorganized"
- •"he is always running so far behind schedule"
- •"he needs his own RN"
- •"he fills out every little piece of paper."
- •"he spends so much time with the patients"
- •"you can never tell what is going on because he uses the two examining rooms at once and some of his older patients take so long to get dressed and undressed"
- •"his patients require a lot of outside referrals and it takes on average 15 minutes per referral and there are 4 or 5 a day"
- •"he generates a huge amount of paperwork he wants followed up on every day"
- •"Terence tends to do funny little things and forget to tell you. He'll tell 4 people to come in at the

end of a session and forget to tell you they're coming. It can make you crazy when these people show up and they're not in the computer, there's no print. He just forgets to communicate. It's all done with very good intentions but it can make you a little bit crazy, hello, if you don't give me the information how can I support you. "

7.2 Dr. Meaford's systems of support

The support systems that we will now work our way through are: Terence himself, the support staff, his colleagues, evaluation, managed care, the patients, the architecture, the homefront, and existing technologies.

7.3 Terence himself

Terence compensates for the lack of support

Terence is perceived by the support staff, administration and even his wife of 28 years as being incredibly disorganized. This perception of "he is too disorganized to get it done at work" is heightened by the fact that Terence is the only clinician in Internal Medicine to carry a significant volume of work home with him every night. This he does in an oversized black briefcase which he is rarely ever seen without. Having observed Terence at home working on the contents of his briefcase, it is clear that he has a rigorous system of organization, but that a significant portion of the work that he has to attend to could actually be triaged by support staff: mail. Observation corroborates this statement: "I think I have a high degree of organization, but it's the kind of organization which is work-around organization which is working around the fact that I'm never well supported."

Terence doesn't delegate

The support staff and administration report that Terence is loath to delegate, "Terence fills out every little piece of paper: "When I see him filling out a blue referral form and stuff, it's like "no Terence", you don't need to do that, you know we need the clinical stuff, we need the stuff that only you can do, if it needs to be signed, we need you to sign it. You really need to be able to hand stuff off." The administrator for the unit agrees with the MA supervisor's assessment that Terence's inability to "hand off" tasks is a problem that has to be addressed, "There does need to be a conversation about what are the pieces of his practice or what he does little piece by little piece that he can give to somebody else. He holds everything so close to the heart that he's really doing a lot of the work that other physicians definitely have other people doing for them. Eventually that type would allow him maybe even to spend as much time as he currently does with his patients, but have less kind of paperwork and administrative stuff to do." Terence recognizes that he has difficulty delegating, "All my life I've been told that I am a poor delegator. Delegation certainly means ceding control over something. Yeah, I obviously like to control the process. The question of the extent to which at age 55 I'm willing to change is among the questions." The irony is that even though Terence has been unsuccessful at implementing his Ready To Act protocols he has a 100% success rate at getting everyone to check with him before proceeding on any front. This includes support staff, administration and as we'll see shortly, even his patients.

Terence's standards: the quest for perfection or a safety measure

The clinical manager the Department of Internal Medicine points out that Dr. Meaford is a perfectionist and that his reputation for excellence is renowned throughout the organization: "We are somewhat elite in that we have Terence. So we are viewed by other people as Oh, you work with Terence. Whenever anybody hears that Terence is here you're somehow, elevated to a different level cause there is this mystic, this thing about Terence that he wouldn't practice with anybody but the best." There is no doubt, Dr. Meaford has very high standards. "He's got amazingly high standards, incredibly high standards for himself and for anyone who works with him, and that's part of that not being able to share, because there is a belief at some level that "I don't know that they're going to back you into the bed the way I would". In order to maintain these standards Dr. Meaford has had to design and implement a system of support for his practice that only he can execute. In order to ensure that his panel members do not fall through the cracks he maintains the following file system:

- files at home referencing "sick" patients which he reviews on a monthly basis
- his daily red file which references patients which for example may be now managed by an oncologist but Terence wants to keep in touch with to offer his encouragement and support, and
- a stack of files on his desk to the right of his computer reminding him of specific items he wants to review with the patient the next time they come for an office visit

Dr Meaford now has the 3 month reminder system on his computer which is allowing him to phase out aspects of his safety net such as the file that he keeps at home.

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7.4 the support staff

the configuration & deployment of staff

The number and configuration of staff and their deployment in terms of tasks presents an ongoing problem for Dr. Meaford. It is never clear if the problem is that there are too few staff as noted in the following quotes: "I also, as I say, find the way that we deploy our staff inherently frustrating. They seem so busy. They're shared by so many people at the same time." Or that they are not the same staff, "I don't have anybody on my side that's there 5 days a week. Because I have Jennifer on Monday and Friday and I have Marylou on Tuesday, Wednesday and Thursday.....It's not easy to talk to one person on Monday and then on Tuesday the other person has no idea what you discussed." Or that their job as a support staff person is not defined clearly enough, "The ideal support staff for me would be the same person up all the time and the same person down all the time." Or that it is too difficult to communicate with them,

> "I cherish all day the five minutes that I'm going to get to talk to the support staff about what the stack of papers that I've given them that I want them to do things with are all about. I lay them on their desk and I say, "I'll come back later when you're between things" or something. I'll say that with a little sticky post-it note on them because they're on the phone and they've got a patient standing in front of them and they're at their so called down-desk."

Or if the problem is related to the way the workload is distributed:

> "I will go out and I'll look at what's going on at the desk and usually their telephones have as many lights lit as Christmas trees have ornaments".

Dr. Meaford says that the responsibility for making sure that they had the right number of staff, appropriately deployed, is a job for someone other than the clinician.

Terence identifies the deployment of staff that would work for him

Terence has a very clear idea of the number of staff required to support his practice and how he would like to see them deployed. "I need help from someone who is an office manager basically, who's going to help me manage my practice so I can pay attention to my patients. I don't think I can manage my practice very well."...."I could see that if I were in private practice I would long ago have hired an office manager." The MA supervisor wouldn't go quite that far. She feels the answer lies in a full time RN just for Terence, "The ideal complement? Terence needs 1 RN, 2 MAs and a shared receptionist. This person (the RN) would not be on front line taking the telephone calls. The MA gets a person on the phone and they were discharged from the hospital and they're having a little bleeding, "is that okay, is that normal?" "You know what, let me have the RN speak with you" or "I think I am having an allergic reaction to medication, you know what, let me have Dr. Meaford's RN call you back". That's the kind of phone calls that person is going to take. Or they're going to do his routine prescription refills that he takes home with him right now. They

are going to do a lot of the stuff that does not require the expertise of Terence Meaford, that just needs a medical person who can go into their medical record and say, "okay you know what, Sovital, obviously this is an allergic reaction, let me put this in your medical record and let me talk to the doctor and prescribe something else". So she can grab Terence in the hall and say I have this woman and she obviously has a Sovital reaction, what would you like me to prescribe for her? She writes the prescription; everybody is happy and Terence doesn't have to spend 10 minutes on the phone. She needs to sit in an office and she will do his immunisations as well."

lack of supervision of the support staff

Although Terence is clear about the number and deployment of staff that would best support his practice, he is conflicted about their management. The issue of personnel management in fact leaves Terence defeated: "For whatever reason, I have always found it's been one of my defects as a parent. I've always found it easier. I hate nagging. I find it easier to do something than to try to get somebody else to do it." Terence says that "we probably need a whole departmental discussion about a minimum set of performance".... "I think there is not enough, there's not enough supervision of the support staff." The issue of management of the support staff is further complicated by the fact that the chain of command is not clear. "This business about does the staff report directly to me or does it report up a chain of command that supervises support staff activity?, is an unsolvable problem."

In other clinical settings in the Healthright community it is not uncommon for the Registered Nurse to be responsible for the staff, but as of yet IMB doesn't have an RN and if they do hire one there will be a great deal of discussion amongst administration and clinicians in IMB as to how she will be deployed. Presently the chain of command dictates that the non-clinical support staff, namely MAs and the receptionist, report to administration even though they are expected to respond to the immediate needs of the clinician.

lack of success in training the long term staff

Embedded in the concept of system of support is "the fit", knowing what the physician wants and then all staff carrying it out consistently. "I can't fix my problems in an idiosyncratic way. It's possible, but it's also possible that the things that I want are not all that complicated and the people that I am talking about, be they Vonny, Maureen, Julie, Sandra, are all long-term people here that I think would be capable of learning these idiosyncrasies in any event." ... "I tried to get some concepts, what I call "Ready To Act" that I wanted every slip of paper that came to my desk to have attached everything needed to complete the task very quickly for me." ... "I drew up a whole lot of protocols. I would train different support staff and then the support staff would turn over. There would be other people there."

Three out of the four MAs have been in IMB for on average eight years. In fact they are among the most seasoned in the care unit. Even though one of these three MA s was assigned to do Dr. Meaford's paperwork all the MAs and the receptionist take messages for him. None of them adhere to his Ready To Act protocols for the messages.

examing rooms not stocked

The support staff is one system of support for Dr. Meaford's practice and each service they provide is also a system . The stocking of the examining room which Dr. Meaford feels is woefully inadequate is a case in point. "We have quite a number of problems about the work readiness of the workrooms, and one of the problems is we run out of all kinds of things that don't seem to have frequent enough restocking or exams to see if they're all stocked." ... "A lot of times equipment that's supposed to be here, they'll be a room that has no Ace bandages, or maybe it doesn't have scalpels or it doesn't have antibiotic ointments and I'll go around to different ones. There's the stocking list, yes, here's the forms that are listed here, "week of" and I guess people are supposed to initial, and I don't see initials."

There is no departmental protocol for stocking the examining rooms or for supervising the stocking of the examing rooms. The stocking of the examining rooms that Dr. Meaford uses is neither uniform nor complete. The stocking of the examining room as a "system of support" will be examined in-depth in Section 2.

phone calls not triaged

Another entirely unsatisfactory system of support for a number of reasons is the phone system. Dr. Meaford has tried 30 minute "phone-in" sessions during a session in the past but they were not successful. There were two reasons for this:

> 1) the issues that he had to field were so complex he couldn't get through more than 3 calls per
> session even though 10 patients had called in and were were on hold throughout the entire time,
> 2) the calls themselves were not triaged by the staff.

The MA supervisor points out that working the phones for Dr. Meaford is a vastly different undertaking that doing so for the other physicians and that this has to be taken into consideration: "Terence's phone's are hard. Terence's phones are so much harder than everyone else's. I would take 15 phone calls for another physician and spend 1/4 of the amount of time that I would spend on Terence Meaford's 15 phone calls. His phone calls are tough. His patients have been around for a long time, his patients need a lot of tests, his patients need funny tests that you've never booked before, you know he's got a tough practice..."

mail not triaged

Dr. Meaford's mail is not triaged either. Dr. Meaford maintains that he gets 3 times as much mail as anyone else. In fact his mail slot is often so full that the staff will deposit the stack in his office to free up space for more incoming mail for him. He wants:

> 1) junk mail and duplicates taken out and thrown away
> 2) departmental mail taken out of the envelopes, lab tests collated, nursing home documentation
> collated, requests requiring support documentation to come to him supported etcetera.

None of these operations are done by the support staff. Terence presently takes the mail home with him and in the evenings spends 30 - 35 minutes triaging his mail.

interruptions when he is with a patient not triaged

Interruptions during the course of a patient visit are not triaged either and this is an ongoing source of irritation for Dr. Meaford. He is very clear with the staff that no patient should ever be denied access to him. However this puts him in the position of constantly being interrupted because there is no one on his team to triage these interruptions. Not infrequently a patient will drop by, merely because they are in the vicinity, with a request for Dr. Meaford, and the staff will interrupt him when he is with another patient in order to field the drop-in member's impromptu request. Or a physician will call when he is with a patient and the staff will interrupt him to let him know that a physician is waiting on the line for him without ascertaining from the caller if it is an emergency or is it possible to arrange for Terence to call them back.

7.5 his colleagues

lack of team medicine

In Terence's model of a successful primary care practice, his colleagues have a very real role as a system of support. "But you asked me what I did really cherish. So I cherish one thing I have which is the patients and one thing that I don't have which is team medicine. If you can cherish something you don't have, I cherish the fantasy of it." ... "We practice alone as you commented. It reminds me of what you observe if you see 4 year olds in a sandbox playing together. What playing together means is they're in the same sandbox and they're both playing." This perception of a lack of team medicine was corroborated by another MA supervisor, "But this group, the MDs, don't talk to each other.....there is a real lack of colleagiality. You know, it's really bad ----it could be a great place but none of them will talk to each other --- they are sort of all for themselves."

December of 1997 there were 2 teams of 2 physicians in Internal Medicine B. The 2 female physicians are presently on leave of absence and will not be returning. This leaves Dr. Meaford on his team and on the other team a male colleague of comparable age who works less than 3/4 time. The department is making due with a part time locum and the resident. There is also a Nurse Practitioner who started at the center just over a year ago. She supports all 4 clinician's practices. Clearly at this point in time Terence does not have a team in any sense of the word.

Although Terence may cherish the though of "team medicine" there is some question in the clinical manager's mind as to whether or not Terence is really a team player. "But I think that truth be told, he's never been a "team player" in the true sense of the word, in the sense that you and I may understand it. He talks about it a lot more these days, about the fact that he's, how does he put it? I think he refers to himself as an "independent practitioner" here, something like that, something to imply that he's singular, "a sole practitioner" is maybe the way he describes him self."

lack of a leader"

Terence's also feels that the department as a whole has the potential to be a system of support. The question at the moment is whether or not this potential is being realized. "I continue to like the chief-less structure that we have which is very participatory but it is not without its rusty undersurface. It can be a difficult apparatus at times to move forward and make decisions. Democracy is very messy."

As the months went by the issue of leadership within the department came to the fore.

"I think most of in our department realize that we have a kind of leadership crisis within our department. We have never wanted a chief. I would say at least two thirds of our department still don't want a chief, fearing autocracy more than anarchy, But one third maybe to one forth of our group is beginning to fear anarchy more than autocracy and is beginning to say, "we want a chief or we want some more cohesive and coherent leadership". What has happened is a compromise between those two stands. Several people have been selected as a management team so that we don't have to pull the whole department together and get every decision, even on minor things, made by consensus."

lack of a shared vision

Early on in the field work it was evident that the physicians shared the same support staff but not the same visions or protocols. As Terence himself noted, "Verlé has observed great heterogeneity in the way that we do our practices and that some practices get a great deal of support and some practices don't get very much support at all and that since people are moved around a lot it's particularly important that there be some common culture about what support staff interactions with clinical staff will be about which is a very good beginning."

7.6 evaluation

the physician's performance

Physician evaluation is complex in that the evaluation is both individual and aggregate. On the individual level the evaluation algorithms give Terence a high score: evaluation at the group level is more problematic. In 1997 10% of the clinician's wages were held back by the organization. "In 1998 that piece of money that comes back to the center based on performance ("financial performance" of the care unit as well as "care experience" scores which are the patient satisfaction scores of the care unit), will in turn be differentially paid out first to departments based on performance and then again based on individual performance." According to the unit's administrator just quoted, Terence's "care experience" scores are very high. In fact the clinical manager pointed out that when his peers said "We are not going to do the Terence/Albert Schweitzer dance anymore, and we're going to call you on your referral patterns, your test-ordering patterns, your prescription writing patterns, on all of it. We want to talk about this with you, the administrator beat them back with his patient satisfaction scores."

the department's performance

Although the department and individual physicians are judged on "care experience" only the care unit as a whole is judged on "care experience" and "financial performance". Once Terence steps out of the arena of "care experience" and into "financial performance" his practice style becomes an issue in the department. Terence's detractors frame his problem of being under-panelled as a practice style issue that needs to be nipped in the bud, but his proponents insist that running behind schedule is a reflection of the complexity of the profiles of the patients that he is treating. The unit's administrator puts the problem in a context, "His access by far is the worst in the department, he knows that. And then you'd say, "Okay his access is really bad". Then you'd say, "well why is his access so bad, is he not working enough hours?" But the man works a million hours a week! He sees more visits per week when you correct for the sex age adjustment than anyone else and those visits per week don't even take into consideration whether the visit is long and complicated versus short and simple and you know most of his are long and complicated. So it's kind of a, you're not sure what to say about his group except you're very reluctant to open his panel because he's got no access. Some would say it's a style issue and there are people out there who say it very clearly, "Yeah, his population is older and sicker, but you know what? It's also a style issue." If that same panel of patients was being handled by doctor "B" they would churn through a lot faster. And so that whole piece is something that they need to negotiate with each other up there (the department of Internal Medicine)." This quote illustrates that physician evaluation acts as an adequate system of support in the realm of "care experience" but the evaluation grid relating to "financial performance" is not fine enough to capture the complexities of Terence's panel which consequently leaves him vulnerable. Financial performance is critical to the survival of the unit as a whole. As the administrator says, " In a system right now that is using every single nickel that they are giving us, our cost structure is still too high as a group. And then there 's a lot of internal stuff that goes on about "well it's me that's too high, it's you that's too high." Clearly tension exists within the department because the stakes are high: "If Huron was on its own financially, I'd have my own re-insurance here, that there would be a lot, that this place could go under. Healthright Plus will not let us "go under" while everybody else (the other care units) is doing well."

7.7 managed care

Given the paradoxes in the snapshots of the last two systems of support, the concept of managed care as a system of support for Terence is a difficult one to embrace. To illustrate this we'll look at the example of the transportation benefit which is a very HMO-driven writing of a benefit, cited by the clinical manager: "The underwriters are looking at this and saying guess what? We do not provide transportation to our members......He (Terence) is quite respectful of the position that we in the insurance end of the business have to set, but he's disgusted with that, and the whole idea of possibly having to compromise his personal ethics to fit into a medical model. It's not acceptable. So, there's the perfectionism, there's the idealism, there's the this and there's the that, that keeps him somewhat isolated. It's really interesting

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because he is this person that is beyond reproach." It is here that the Marlborough Man attempts to meet managed care on it's own turf by breaking away from Healthright and becoming a not-for-profit clinician-run entity called Healthright Plus (Jan 1st 1998). Terence sums up why he feels the transition from an HMO to a PMO is important: " As far as I am concerned, among the things that I see in it, is a way of trying to secure the values that I hold dearest. I continue to have as an article of faith that the best way that you can do well economically is to do good. We can save money by penny-pinching sometimes but most of the time that comes around to really bite you. You can save money by saving waste, and I think you have a moral obligation to do that, but I think both of those pale in insignificance by the amount of money you can save by keeping everybody healthy." By becoming involved with the Healthright Plus Board of Trustees Terence is making every effort to ensure that his values and the organization's values coalesce.

7.8 the patients

training the patients to be part of the problem

According to the support staff Terence has his patients trained to be part of the problem. Terence: "But just as I said I can attract or repel support staff who like my style. So after a while I can have a panel that has certain expectations about speaking to me personally and only me if that's my particular style." One of the MA supervisors points out that the dynamic is more complicated than natural selection. Terence has his patients trained to speak only with him independent of the scale of the problem: "I think the hardest thing with Terence's practice is that Terence's patients feel that Terence is the only person who can help them......You need to be persistent, kind of push back with them. Lets say Monday a patient call and says, "I'm looking for Dr. Meaford and I say "he is not in today and he isn't expected in until Wednesday evening". She says, well, okay, that's a problem". "Well, what's going on?" "I went to the emergency room this weekend and I separated my shoulder and I need follow up care." " I said, "okay, you really don't need Dr. Meaford for that, we can get you right to orthopaedics, where you've already been diagnosed and we can get you seen there." But if you're not savvy enough to push back with Terence's patients, you could leave a message, saying let the person wait for Terence, so I think that you really have to beg them to help them. "You know he's not here, and I know you think he is wonderful and so do we, but let someone else help you in his absence", and if he is there, forget it. I think it is very hard to even get them to share with you information. I feel like you really have to dig. It's like what is going on today, and then they tend to think well, I'm going to talk to Dr. Meaford, and I say well it's nice if we're able to leave a message letting him know how urgent or non urgent this is so that when he goes to his 25 messages he'll know that the woman with belly pain and an elevated temperature should probably be his first call as opposed to the person who wants a prescription refill that they're going to pick up on Wednesday. So I think it is difficult sometimes to communicate with the patient and let them know that you have their best interests at heart."

the double bind

The pressure from the organization to meet patient needs puts Terence in a double bind. The administrator points out that surveys over and over say that patients want their own doctor to do things. She goes on to say that "that's even something by which we may all be judged as part of our compensation package is the percentage of visits that occur with on's own physician." Keith Grint in his book Fuzzy Management points out that the behaviour that evaluation precipitates is more important than what is being evaluated, or to be put more plainly, you become what you are being evaluated on! Evaluating "patient satisfaction" puts tremendous pressure on the clinicians to perform in areas that might better be served by another qualified team member. The MA supervisor points out that the reason that in Terence's case he sees more of his own patients than any of the other doctors see of their's because the MAs simply cannot induce the members to see anyone else: "They think he is grand, he's wonderful and he's top of the line and they'll be uncomfortable for another day so that they can talk to Terence as opposed to talking to someone else or seeing someone else. So I think the reason Terence has such a huge amount of pink and blue slips is because his patients will wait for him. They have a very hard time when he goes on vacation. They are very dependent upon him and they're very leery of anyone else." The question is did managed care anticipate this cascade effect when they they decided to evaluate the number of times the physician sees his own patients? And furthermore is this "patient satisfaction" strategy cost effective?

7.9 the architecture

sight lines are nonexistent

Dr. Meaford has expressed frustration with the physical layout of the department primarily because of the lack of immediate contact with the MAs. His office is down the hall from the MA desk. When the MAs are answering the phone or booking follow up appointments for patients they can't see if he needs something in the course of a session. If he does want their help he has to walk up the hallway, around the corner and hope that they are not too busy with patients to assist him.

lack of uniformity in the design of the examing rooms

Another faulty system of support relating directly to the architecture of the environment is the fact that none of the examining rooms are identical. Each physician has two dedicated examining rooms. However they may use additional examing rooms depending on demand. Because the unit is in a renovated building with windows of an unusual size and placement, no two examining rooms are the same. This increases Terence's disorientation. Furthermore when he does an urgent care session he does so down in IMA where the stocking of the examining rooms is also idiosyncratic. The fact that the examining rooms are not the same makes the issue of stocking more acute. Terence would like them stocked the same way but given the retro fit of the building, the fact that it was a renovated building not a new one, there are always going to be variations (on irritation).

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lack of "flow" indicators in the environment

The present physical configuration of having Terence's MAs located at the front of the department and his office and the examining rooms at the back of the department is not supporting the staff's ability to see where he is in the flow. Terence has an idea for how this problem can be solved. "I've seen places where there are colour coded little swings that can be swung in and out, like in here you can pull different boards out that would mean things that would indicate for example in which room I physically am at the time". Terence would like to be able to indicate to the staff where he is in his work flow and whether or not he is to be sought out. Terence points out that there are times when it is really inappropriate for the encounter to be interrupted, for example when he is doing marriage counselling or discussing the prognosis for terminally ill patients.

lack of space for a team or partner, pod or team

Terence needs more space to support his practice. The consensus amongst administration and support staff is that the best way to support Terence's practice is for Terence to share his office or a combination of his office and examing rooms with an MA who needs space for educating patients or an RN who will be working with his patient panel. The clinical manager sums us the ideal scenario: "the best way to support that man would be to put that person (a nurse or nurse practitioner) in his office, an office where there were two desks, one of those end offices so that the anxiety level would drop with some experience. When he was hearing the nurse have a phone conversation he could monitor, he could coach, he could intercede if he thought it was necessary, he would be available. The physical setup he has now doesn't allow him that kind of control."

lack of private and semi-private space to talk with patients or support staff

Another space related problem is the lack of a consultation space to be used by both Terence and the support staff. "Certainly if I ran my own practice and I had two or three physicians or nurse practitioners and maybe two support staff and that's it, I would salvage a private place to talk with them where they weren't on the phone and in front of customers and also secure a time." ... "I think we really are hurting for a private place to talk to a patient, my support staff, and a private place for patient education, those two things." Terence goes on to say: "Everyday I do hear conversations that actually upset me that take place, because they seem to me to take place right at that down desk." "There needs to be a little patient-education space. If it is just off the waiting room that's all the better." Dr. Meaford frequently deals with the patients himself because of his sensitivity to issues around privacy at the MAs front desk. This of course extends the appointment times.

lack of support in the function of Terence's office

At the moment Dr. Meaford feels that the state of his office, particularly when strewn with papers, is not fit for visitors. On occasion in the past he has apologised and just ushered the patient in but he feels uncomfortable about doing so. "Say I'm talking to a husband and wife about her diagnosis of breast

cancer, we don't want to talk in an exam room with a clinical table you just want to sit down and talk together. We make a different kind of eye contact when we're all in normal chairs."

During a session, Dr. Meaford's office becomes a spectacle to behold. Like his colleagues, Dr Meaford begins to shed paper the moment he crosses the threshold and by the end of a session he is knee deep. The organization of the papers is not immediately transparent, but over the course of observing several clinical sessions his system was revealed.

- •There is a red file for items that can only be attended to during working hours, such as getting in touch with colleagues.
- •There is his blue file which contains calls that can be made from home after hours or on the weekends or they have to be made in the evening.
- •To the left of his keyboard is the "hot message-slip" pile, which needs to be dealt with the same day.
- •To the right of the keyboard is the expected-visit pile which includes encounters that have appended to them special graphic support material or notes for Terence reminding him exactly what he wants to accomplish on his next visit.
- •Between the keyboard and the monitor are the pink prescription forms and matted on the remaining surface are encounter forms and masses of blue slips. (Towards the back of the desk but holding their own are freestanding photos of his wife and mother.)
- •On the floor there is an array of piles, encounter forms that he has finished with, the "homework" pile, the "hospital rounding" documentation pile, the Huron "rounding" documents pile, and the shredder pile.
- •On the window sill are two non-files as Terence likes to call them, one for institutional memoranda from the pharmacy or medical records etc., papers that have to do with procedures, formulary items or relative pricing and need to be readily available. The other pile relates to patient education and jammed in between these piles and the window casement are his stationary supplies. There are also 4 stacking files (stuffed) on his file cabinet (empty) and above his desk are two shelves housing an assortment of texts.

Terence is conflicted about the best means of addressing filing:

"The problem is that I have frequently found, frequently, that in my professional life that I will spend hours or days organizing such a file and putting everything away and hardly ever consult it again so that the ratio of time that it took to put the file together, to the amount of benefit that I get from the file, continues to be against me. What seems to happen here is that I keep some of these things desktop for about three months, go on a sweep and throw it all into the wastebasket at the end of three months and in that three month period in all candour if I say, "Oh, I saw a memo about that, I know it's right in this group, I'll go through it like this and yes it will be inefficient because I'll waste 10 minutes looking for a piece of paper but in fact I'll do that three times in a month and that 30 minutes was less than organizing the file ever would have been. I don't know, I haven't figured

out yet the most practical. What has happen to me more than once in my career is that I've said this office is a mess, I'm taking everything off the bulletin board, everything off here, everything off here, putting them in a box, bring them home and I'm going to organize that box, and then a week will go by, and I haven't organized the box and it will also occur to me that I haven't missed anything that was in the box and then two weeks go by and I haven't missed it. After a month I throw out the box. In other words I have come to a lot of ways of doing things that I think may be dysfunctional but I guess I'm not thoroughly convinced that they are dysfunctional."

Clearly his office is not operating as a system of support. There are not enough surfaces for him to organize his piles on during the course of a session nor are their places for him to "store" piles that only need to be accessed from time to time. Another lack in this system of support is the fact that there are no

designated places where the support staff can access documentation that requires their attention, for example lab reports that need to be collated. The lab reports are presently either in his briefcase or in a pile at home.

7.10 the home front

Terence regards his home as a system of support because when working there he is less likely to be interrupted. He does not have a designated office but each evening sets up shop at the dining room table. There is a computer, printer and fax machine in the household but they are upstairs. Here too the systems of support are distributed: the telephone that Terence uses is in the kitchen downstairs, the computer and printer are upstairs. He uses the same non-filing system (piles of documentation) at home that he has at the office.

7.11 existing technologies

the printer

Although reason would dictate that the printer, fax machine, copier, and phone would all be systems of support, there are dynamics around each of these tools that net no end of frustration for Terence. We shall start with the printer. "And the only printer that it (his computer) will dump to is in the clinical supervisor's office where I now know where I can find a key so I can get in there and get it, but her printer is one that I really haven't learned the ins and outs of, it's a laser printer and it frequently won't print my messages for me unless somebody does something to it, it's off line temporarily etcetera."

The MAs also point out that usage of the dot matrix printer used by staff during sessions to print out patient charts is at a premium and that Dr. Meaford's requests for support documentation often tie it up. If he had a printer in his office the support documentation required to support his messages for example, could be dumped to it.

the fax

As for the fax machine, it's down in IMA at the other end of the floor. "We've asked over and over again for a fax machine for IMB but they say it is to much money." There is one fax machine for the department and it is located in Internal Medicine A. The MAs estimate that they send 7 - 10 faxes per clinical session and that it takes approximately 10 minutes to walk down to IMA at the other end of the floor, send the fax and ensure that the fax has gone through. Often the fax is busy and they have to wait in IMA until the lines are free. The MAs then they have to bring the fax back down to IMB for reference in case there are any problems. The support staff point out that this leaves them constantly short staffed during the sessions.

the copier

The photo copy machine for the entire unit is 2 floors down in the basement. The support staff estimate that they use it with the same frequency as the fax machine but often the requests to have something photocopied are more immediate in that the patient is standing there waiting for them to do it or the physician is waiting for them to do it so they can discuss the material with the patient.

the phone

The way that the phone are presently working is a problem for Terence, the staff and the patients. The MA supervisor summarises the primary problem for the support staff's point of view. "I can't tell you the number of calls we have to answer 3 or 4 times because our senior citizens hang up." Although Terence is resistant to an automated interface "over my dead body", the present patient-unit interface is a problem for Terence's elderly patients. The support staff pointed out that when Terence's very elderly patients are put on hold all they hear is "dead air": there isn't music or information on health tips to let them know that they are still on hold. Consequently the members think that they have been cut off so they hang up and call again. Which means they have to run the gauntlet of the front desk for the care unit, the department's receptionist and then the MA and in the process of doing so at each step along the way these elderly patients could be put on hold. This dynamic of repeatedly calling back puts additional stress on the system. By the same token, If Terence wants to place a long distance call he has to go through the front desk receptionist and frequently when doing so he is put on hold. The phone system is a bottleneck for both incoming and out going calls.

ABMII: lack of cybernetic support

The final group of support systems that we will profile relate to ABMII, the current Electronic Medical Record (EMR) system. Prior to the installation of his PC, Terence was able to get the institution's e-mail , formerly called QuickMail at home. Presently he has to print off any mail that he wants to review or

reference at home and we have already explored the challenge of getting documents printed. In other words presently, Terence has to be in situ in order to communicate via the institution's e-mail. "I have a PC now instead of a dumb terminal, and there is a lot it will do but I have never been given any formalised instruction on what it will do and how to do it, nor opportunities to sign up for same, and so I'm learning little pieces but it's hard to take advantage of it." ..."I'm still trying to learn to get my messages at home through BB Mail and I've been given various forms of help in configuring the computer but I'm not getting anywhere, so that there's this constant feeling that I could be so much more efficient with a little more cybernetic support as well."

ABMII: the scheduling system

Another source of frustration for Terence, administration and his support staff is the fact that the demographics of Terence's practice sessions do not reflect life on the screen. The administrator for the unit has said, "What I would like to see is that his schedules are more realistic in terms of the length of time he spends with patients so that if a session of his normally runs for 6 hours instead of for 4 then why doesn't it look like 6 hours on the computer? And so that he doesn't have patients waiting for an hour and a half in the waiting room, which has eventually got to get back to him, he knows he is behind, so that feeling. It would make it easier for his medical assistants to figure out what is going on." The staff too have remarked on the difference it would make to have control over the time slots that are made available to Terence's patients. They maintain that in Terence's practice there is no such thing as a 15 minute appointment. The current computer software only allows for 15 and 30 minute slots.

ABMII tracks patient and physician utilization costs but it does not capture other critical related data. Earlier when we looked at evaluation as a system of support for Terence's practice we noted that there was a need to develop programming algorithms that would reflect all aspects of Terence's practice. For example the present computer program does not capture the work that Terence does outside the sessions. The computer system ABMII can track physician and patient utilization costs. Red flags are going up at the departmental and unit level because of Terence's "high standards" practice style and his panel members which are described as "elderly disadvantaged with complex health problems". Both of these factors are pointing to high utilization costs. High utilization costs are going to become an even greater issue in 1998 when Healthright Plus assumes the capitation risk. As the administrator points out, prior to that if the unit went over it's budget Healthright would bail them out. But now, in (1998) under Healthright Plus if the unit spends more than it's capitation that's it, you're either in the red or in the black."

use of the technology does not improve efficiency

The final short coming in this digital system of support that we shall touch on is the is the time that it takes to log on to the system. To insure security and patient confidentiality, the system closes down if it isn't used within a certain time period. Approximately 15 times a day this necessitates several minutes on Dr. Meaford's part to log back in to the system. He wonders if a card swipe wouldn't work just as well. Once logged on he then has to deal with the shortcomings of the software. For example it doesn't allow him to query who in IMA or IMB would be doing the urgent care session and could fit in an unexpected patient.

7.12 summary

Clearly Dr. Meaford has a problem and in part it is due to the fact that he is not getting enough support for his practice but it is not entirely a local problem. Certainly there are areas that Terence himself can address, for example communicating with the staff regarding the patients that he has booked before and after sessions so that the support staff can have the necessary encounter forms, support material etcetera. ready for him. There are also support problems that can be addressed at the departmental or managerial level, for example working up an infrastructure and supervision protocols to make sure that messages are accurate and complete and that the examing rooms are stocked. But there are also support issues that are simply not going to be addressed because the organisations agenda is overriding the physician's. The organization is putting policies in place that do not mesh with current medical practice. A case in point would be the organizational policy that dictates that every physician must see as many of their own patients as possible. In fact it is one of the performance categories evaluated. This policy has been put in place in part because the primary driver in the health care industry has moved from cost-containment to patient-satisfaction. When this policy is implemented, as we have seen in Terence's case, it puts tremendous pressure on his practice ie. he responds to patient requests that previously might have been handled by a NP or clinician doing urgent care. By doing so he becomes even less efficient. Ironically physicians seeing their own patients is a policy that supports the organization not the physician (who feels pressured to field every patient request personally) and certainly not the patients (whose visit gets interrupted). Policy when it's implemented either supports or stresses practice. Clearly Terence is beginning to feel the heat.

We will now turn our attention to the issue of implementation in relation to Terence's practice.

8 THE READY TO ACT PROFILES

Following is an overview of the Ready To Act Protocols designed by Dr. Meaford.

overview of the Ready To Act protocols

Dr. Meaford has in fact designed exactly the systems of support required to meet the needs of his practice, but he has failed repeatedly in the implementation of these systems. Based on the principal underlying their use, his protocols are called "Ready To Act" (RTA). In this section we are going to look specifically at the RTA protocol for "the blue slips" because as the physician puts it, "the flow of the blue slips is the flow of the practice". It is important to understand the dynamics around implementation failure because as we have just seen in the preceding chapter the profound stress points in medical practice are when organizational policies are actually in the process of being implemented. Simply put, we need to know more about the conditions for implementation in order to ready ourselves for it. Furthermore we want to be able to identify the signs when implementation is not going well or when it proves downright impossible. In the case of failure to implement systems of support for Terence's practice, default patterns of practice will emerge. The importance of identifying these default patterns lies in the fact that they are indicators of "unreadiness" in a larger context.

definition of Ready To Act protocols

Dr. Meaford wants the "Ready To Act" protocol to be applied to every aspect of support for his practice. This includes: encounter forms, his mail, messages, in effect any thing that links paper to his practice of medicine. Over the years Dr. Meaford developed a series of 'Ready To Act' protocols which he determined would cut down on the amount of overall paperwork generated each session and the time that it requires to process that paperwork. Following, Dr. Meaford articulates the level of support that he has in mind.

> "I have this concept that the administrators here know, I've talked about it for years, it's called "Ready To Act", which means that when I get a blue slip it should have been processed so thoroughly that there's nothing else that anybody could do for me in presenting me with a blue slip. This is a telephone message. The patients says they're calling for test results. Well the test results should be stapled to it. Moreover, if it is something that has a context like they're calling for their glycohemoglobin, they're diabetic and this is a test result that shows me how well regulated their diabetes is, I would like support staff to have the smarts that they know I can give them a list of the most common tests, that when the patient asks me for the glycohemoglobin what I want is a flow chart of the glycohemoglobin compared to prior glycohemoglobin. Because the very next question after "What was my result?" is going to be, "Well was it better or worse?" The patient needs a letter for being out from work and it needs to say that they saw me, on what dates they saw me and what my diagnosis was and when I said they could go back to work. As well, my last encounter should be printed and attached to such a note. The letter should have an envelope addressed already and the letter could even be written out and just ready for my signature. These are the things that I could teach, but the problem is I've never gotten them consistently from anyone. Even when I worked at it."

"the flow of the Blue Slips is the flow of the practice"

Dr. Meaford maintains that "the flow of blue slips is indeed the flow of the practice". "Blue Slips" is really a euphemism for asynchronous communication within the Department of Internal Medicine. There are 2 kinds of "blue slips": 1) the ones that are truly blue indicate that there is some form of message for Dr. Meaford, and 2) the pink slips which indicate a prescription related request. There is no consensus amongst the staff as to what constitutes an emergency. Each of the support staff has their own method of indicating on a blue slip that it is really an emergency request that must be responded to ASAP. Some of the support staff use highlighters to indicate that that it is a priority slip, others use STAT stickers. One of the problems for both Dr. Meaford and the staff is that once he picks up that high priority slip which they have left for him on his office chair, it gets shuffled in with 20 or 30 odd others and there is no instantaneous means of differentiating "emergencies" from regular "call-backs".

problem #1: lack of accuracy and completeness

The "blue slip" protocol for the support staff is to take "the message" and record pertinent information on the blue form. Any of the support staff, including the receptionist, will answer a call and process a blue slip destined for Dr. Meaford. A critical mass of "blue slips" reach Dr. Meaford with incorrect or incomplete information. Even though 3 of the 4 MAs have been working in IMB on average 8 years the problem persists. The patient's name is not spelled correctly, the form is missing phone numbers particularly the number at which they can be reached after 5:00 pm, or the message isn't specific enough and there is no support documentation to expedite Dr. Meaford's return call. Once again triage is an issue for Terence, "One thing I feel most acutely, the nature of messages to me, which come in through a variety of different windows and they compete for my attention in ways that aren't necessarily in proportion to their importance or urgency." Dr. Meaford wants the messages triaged into: 1) emergency messages, 2) messages requiring support documentation, or 3) messages that are just routine inquiries.

support staff not supported

The staff have their own complaints about the blue slips. To begin with the forms themselves are not conducive to capturing the data that Dr. Meaford requires. The forms were designed when the center opened 10 years ago and to their knowledge haven't been revised since. There is also a chronic problem with patients that call back repeatedly during a session. With each repeated call the member has to reiterate all their identification data and the salient details about their complaint because by this time the preceding blue slips generated by that caller are in Terence's office proper. According to the support staff, members find this very frustrating and often take it out on the staff. It might be possible to cut back on these multiple calls if the support staff could "dig" the requisite information out of Terence's patients, but as previously noted by the MA supervisor, this particular interface requires a great deal of skill and "savvy". As an observer it was difficult to determine whether the MAs are trained to dig but don't have the time or inclination to do so, or whether they desist because they don't have the clinical backup of an LPN or NP to field calls that are beyond their expertise.

problem #2: placement of the blue slips

The destination of the blue slips becomes yet another problem. The MAs will then take the slip and placed it in any of the following 6 potential locations:

•in with Dr. Meaford's mail on the counter behind the MAs

•in the Lucite box on his office door

•in the Lucite box to the right of his door

•in any of the 4 stacking shelves on the file cabinet in his office

•on his chair

•on his desk.

Dr. Meaford finds it particularly upsetting to discover emergency "slips" in amongst his mail at the end of the day. This problem of where to deliver the blue slips is compounded by the fact that not infrequently, messages are delivered from outside IMB and these individuals unwittingly put them in the wrong place, that is, his mail box which is located right behind the down-MA's desk adjacent to the reception area.

problem #3: triaging of the blue slips

Dr. Meaford would like his blue slips to be triaged. On average he gets 30 of these message slips per session that require a response. He has said that he would like to see these "call-backs" reduced in number to 20 slips per session. People have offered from time to time to field some of those slips for him but given the amount of time that it would take to inform the good Samaritan, it is easier for Dr. Meaford to return the call himself. As noted earlier, Dr. Meaford has also unsuccessfully tried a "phone-in" time to triage some of these requests himself, but because of his patient's complex problems the "phone-in" strategy did not work. Not only did it frustrate the patients on hold but in an effort to placate them Dr. Meaford would end up extending the "phone-in" time into his clinical session which would in turn put him behind schedule for the entire day.

problem #4: support for phone-in sessions

As alluded to earlier, the demise of the "phone-in" sessions was due in part to the fact that the sessions themselves were not supported by the staff:

Terence: "the calls need to be screened out and not put into it that are just, 'what are my test results", and prescription refills, and all the other things that could dominate that session. Frequently the calls would be calls for which you were unprepared and don't have the information and you have to say, "I'll find it out and get back to you", which is a colossal waste of everyone's time, until the clinician becomes basically the MA screening incoming calls."

8.2 Why did implementation of the RTA protocols fail?

2 dynamics can be readily identified in the failure of the "Blue Slip " RTA protocol. They are:
1) there isn't any infrastructure to pass on the information about Dr. Meaford's RTA protocols. Although the 3 staff members who had been in the department working with Dr. Meaford for the past 8 years each said yes, they knew all about Dr. Meaford's RTA protocols none of them could produce a written version or point me to where I might find one. In other words even if a staff member was inclined to support Dr. Meaford there was nothing in IMB for the existing or incoming staff to reference. Communication about what Dr. Meaford wants is clearly a problem.

2) there was no one there to supervise the implementation of these protocols. Supervision of the support staff is the responsibility of administration and it is here that we come to the crux of the matter. The RTA protocols are systems that support Terence's practice; they were not generated to support the needs of administration or the organization. In other words as long as the RTAs are framed up solely as a support for Terence's practice they will not be implemented. Terence is going to have to frame up his needs in a way that they conform with organizational policy before he is going to make any headway on this issue.

At the beginning of the 7 month research period Terence situated his failure to implement the RTA protocols locally, "It's not that I have no clear idea of what I want done. It's that I have no clear idea how to get other people to do it for me." By the end of the same period Terence's was placing this problem within the broader context of the organization: "I presume that my time is being paid for at a higher hourly rate than the time of my support staff and therefore if this organization was doing things right it would not have me spend time that I spend on these things. But I am aware that I am salaried, not paid by the hour, and that it may be cheaper to have a salaried person do something as an add-on than a person you pay a wage to."

The overall default patterns that emerge here result in inefficiency and frustration, and stem from a lack of committed support both for Terence and for the staff, particularly in terms of resources and supervision. We will now look more closely at these default patterns and their origins.

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9 PRIMARY CARE PRACTICE: BY DEFAULT OR BY DESIGN?

This section will look at the data presented in the overview and the RTA protocol and identify default patterns of behaviour being acted out by Terence, the support staff and the department as a whole. Once identified, these default patterns can be teased out so that their salient characteristics can more readily recognized in the future. Furthermore, the default patterns can be assessed as to how they impact on the efficiency of a primary care practice environment. The importance of linking default practice patterns with efficiency/inefficiency lies in the fact that when placed in this context, these characteristics can be identified as manifestations of failed implementation of organizational policy. Or coming at it from another direction, the most inefficient environment might also be the environment where implementation of policy has failed.

We will now turn our attention to profiles of Terence's, the support staff's and the department's default practice patterns.

9.1 Terence's default practice patterns

Terence essentially practices in isolation. "I will practice all session and not know who else has practised and not exchange a word with the other person." The clinical manager is quick to support this claim: "what makes it hard to support Terence is his work style, which is head own, shoulders rounded, rushing, and I do believe that's quite intentional at some level, to avoid their glance, because "I've got an agenda that I have to get through this, this and this or I'm going to be here till the cows come home" and there's just not enough time, but there has to be enough time, there's not enough time in Terence's life to be able to sit down and really look at what we could be doing differently, and he doesn't make enough time for us to get him, so it's this real catch-22. It's difficult." As we have seen, presently there is little opportunity for communication between Terence and his support staff or for between Terence and his colleagues. There is also no evidence of team dynamic between the physician Terence, the nurse practitioner and his 2 MAs. Nor is there evidence of Terence having a medical partner on the team. The net result is that Terence practices in isolation and that he alone shoulders the responsibility for his elderly, very sick patient panel. Because of this default of practising in isolation neither Terence nor his patients have a fall back position.

Terence puts his head down and just works harder for deficiencies in the system
Terence's first-line strategy to cope with the perceived lack of support for his practice is to just put his head down and work even harder.

> "I go to tell them what I want and I can't get their attention because they have a patient in front of them. I'm not going to talk about another patient while they're talking to a patient in front of them. I feel as though I have no one to give it to, so I turn around and walk back into my office".

Because of the workload and apparent unsolvability of his problem Terence is beginning to show signs of battle fatigue.

> "Rooms are not stocked. I'm running from room to room to get supplies that every room ought to have right in there. I don't know how many times we've talked about that. You get very tired talking about that."

Now the shortcomings of the systems of support for his practice are so widespread this default of working even harder is no longer tenable.

> "I'm very busy but I'm not convinced I'm not just doing the wrong things. I've spent a lifetime of refusing help when I clearly needed help. I'm sort of determined to make myself try to listen to somebody who is trying to help me. Do you understand me?"

Terence draws the line

One of the implicit expectations of managed care is the fact that physicians are expected to take on administrative and management duties. In this light, Terence's refusal to take on these duties or actively delegate them can be interpreted as a default position. "I have some skills which I take pleasure in and which my patients take pleasure in. I think I can listen to and communicate well with patients and I can give them a sense of comfort and ease and I can solve some of their complicated problems, but I do not have other skills. I'm not a time manager and I'm not an office manager." Once again he compensates by working harder.

9.2 the support staff's default practice patterns

The default patterns of the support staff can to be framed from two perspectives. The first is to examine the staff's default pattern of failing to provide Terence with the support that he has articulated, and the second perspective is to examine the support resources that the staff are lacking for their own work. The default practice of the support staff is attributable to a blend of these two factors. The end result is that each of the MAs exercise a margin of what they refer to as "their own way of doing things". This means that in addition to a general, shared, large-grid understanding of the tasks at hand, each MA manifests their own style for taking messages, stocking the examing rooms, triaging patients, etcetera. The support staff's default practice in light of the support systems that they have available to them is to do things "on the fly" and to "go by the seat of their pants". This involves a complex decision-making process governed by the need to react quickly, responding to the needs of more than one individual, responding first to the item of greatest expressed urgency, and the need to do several tasks at the same time. The doctor is not always "calling the shots" in this process. The clinical manager is as much a "boss" as the doctor. Hence Terence's take on their default performance: "Every now and then I get something that's thoroughly worked up. I think, "Wow, they really understand what I mean." They're either too busy or too lazy or too something to do it most of the time. I don't get that much."

9.3 the department's default practice patterns

The operative default verb in the department is "to scramble". Because of the lack of sufficient and integrated systems of support the unit at every level appears to be scrambling. The institution is scrambling because of a declining membership and impending responsibility for same with the change-over from an HMO to a PMO. The remaining clinical staff in IMB is scrambling to cover the practices of the two female physicians who are not returning, and the support staff are scrambling because they feel there aren't enough of them and they don't have the appropriate technologies such as the fax and photocopier to support their practice. Additional changes in policy subsequent to the change over from an HMO to a PMO have resulted in the decentralization of organizational tasks which has trickled down to the departments as an increased workload for each of our players. For example, the support staff now have to collect additional information regarding billing from the patient outside the Healthright plan.

interruptability as an indicator of scrambling

The high number of interruptions that Terence experiences in his practice can be interpreted as an indicator of the phenomenon of scrambling we have just cited. Coiera points out in his research that "the team-based nature of work and worker mobility (in hospitals), both contribute to the need for communication with, and hence interruption, of colleagues. He goes on to say that there seems to be a significant cost in time and efficiency arising out of the interruption-driven nature of the hospital work environment (Coiera, 1996). The same may hold true for the primary care practice environment. Because of the lack of clearly defined protocols and the lack of implementation of integrated systems of support, this default pattern of being constantly interrupted, emerges.

configuration of the team unsatisfactory

The final default position of the department resulting from the lack of systems of support, is the absence of any team work. This includes team work between Terence and his colleagues, and team work between Terence and his support staff. As Terence himself says he can only cherish the though of a team, not the reality. But maybe the reality is as the clinical manager points out " I think that a "team" is different than a "partnership". I think he's quite capable of partnership versus team. He gets very frightened by the group thing, like sometimes goes on in teams like ours." Perhaps this relates to the issue of evaluation, the dynamics of which ensure that they don't practice as a team.

I think that at this point it is safe to say that default practice patterns are a reality and that there are characteristics embedded in these default practices that cut across the default patterns acted out by Terence, the support staff and the department. Briefly, these characteristics are:
1) Communication at every level poses a problem. It is either lacking altogether, inadequate or "locally selfish" as Coiera would label it.

2) Isolation is present at every level; Terence works alone, the staff are not working with the physician or administration and the department makes a point of keeping the parties isolated: for example the MA supervisor does not attend departmental meetings.

3) Idiosyncratic or local solutions are the first line strategy for coping, in that Terence tries to implement his RTA protocols and each of the support staff make it up as they go along.

Having identified a sampling of default patterns, I will now analyse how the characteristics of these patterns impact on the efficiency of the primary care practice environment. In the course of carrying out this analysis I will add to the list of characteristics which will form the core elements for designing our implementation readiness criteria. I would like to emphasise that in the analysis I will be looking at how policy impacts on practice. There are surprises! The point that I want to make is that even at the departmental level there are opportunities to align policy with practice and thereby achieve a more efficient practice.

9.4 analysis of default patterns

At this particular moment in time December 1997, leadership is an outstanding issue at every level in the Department of Internal Medicine. The fact that the clinicians are "chief-less" gives administrators and support staff in supervisorial positions a very clear message about what is expected of them as leaders within their sectors. When this cross-section was compiled (December 1997) the clinical supervisor, the MA supervisor and the senior MA were virtually incapacitated in their leadership roles. I would like to suggest that this was in some respects a reflection of the modus operandi being projected by the clinicians. If no single physician was going to come forward and take on the responsibility of being the leader then no one else in a supervisorial position was prepared to "take the plunge" either. A "chief-less" structure in the department when it was first founded might very well have been an appropriate choice because the numbers (3 physicians), were small enough to constitute a balanced partnership. 10 years later perhaps the department has outgrown that management structure. In other words the physician's policy to remain chief-less may have served their needs at the local level but it might not be serving their needs on the organizational level. By their own account, being leaderless means being less efficient: This means that the policies that the physicians are enacting as a group are taking them in the opposite direction that the organization is heading: the organization wants to become more efficient. That is why they are implementing Meta Systems. This gap between the two, if it persists or widens, is only going to increase the stress on physician practice when further organizational policy implementation is attempted.

There is however evidence of what theories on Fuzzy Management, refer to as "deep" or "distributed" leadership. Key to the success of "deep" leadership is the concept that every member of the organization irrespective of the hierarchy, can lead. In other words members of the organization demonstrate, by example, processes and practices that inspire or pull their cohorts in their wake (Grint 1997). I think there is

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a strong element of deep leadership in Terence's practice patterns but again in order to be effective he has to frame up his needs within the policies of the organization. In other words, he has to frame up his problems as the part of the organisation's problems and in doing so he has to make sure they are not perceived as merely idiosyncratic. When I hear his peers say, "They don't make them like Terence anymore", the first thing that comes to my mind is the process of marginalization. This is a default pattern that we want to avoid. At the organizational level as a member of the Board of Trustees, Terence is aligning his personal vision with organizational policy but he now has to find a way to do so at the local level for his own practice.

change:

So the question remains: Is Terence willing to make changes that will bring about the implementation of systems of support for his practice? Does he know what those changes are and at what level they need to be made? and finally, is he willing to go the distance to initiate and sustain those changes? Something in Terence's practise has to change, putting his head down and working harder is not solving his problems. Terence was by his own admission "a hard case": As he says: " I do believe that one of the hardest parts for the whole thing to change is yours truly." Dr. Meaford is in fact notorious throughout the institution for having "resisted help" over the years. By the end of our second meeting however, Dr. Meaford had made it patently clear that he wasn't against change per se but that he had a very clear vision for a specific interface would enable him to entertain and implement change:

> "Well, I think I have a name of being a somewhat resistant case because reformers have come in and looked at what I do sometimes and say "no it would be better to do it that way", and they find that I don't change. But I have often felt that the reformer has not understood the, the, they've understood what is dysfunctional about doing something a certain way but they've never grasped what's functional about it. It is said about smokers, that if you want to get them to stop smoking, it isn't anywhere near enough to understand what's dangerous and bad and harmful about smoking, you had better well understand, what's good about it because if you don't you're not going to get anywhere with them. Well I'm that way and I presume that there are better ways to do things that I am now doing. I really do think that I want help, but I also, I think I told you the experience with the person that moved down to the other side, that I thought that she came in with a lot of rearrangements of things that didn't betray enough understanding of why they were the weird way that they were. "

The message was clear. Change would occur if Terence set the pace and everyone followed: "I have my habits. To some extent they work for me and to some extent I am willing to admit that some of them are dysfunctional. Actually I want someone to help me fix the dysfunctional ones and not destroy the ones that work for me." Terence is keenly aware that default practice patterns are inefficient and that if his practice wasn't embedded in a larger system of support, aka the organization, he would have done something about it. "if I were in private practice I would long ago have hired an office manager". According

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to Terence's expressed perception of his role in the process of change, implementation will be successful if it is done at his pace, staggered, incremental and builds on his existing strengths. If it isn't, the default pattern of head down and working even harder will persist.

espoused self interest super cedes support for Dr. Meaford's practice

The ripples around issues of leadership, workload and institutional viability reach seismic proportions by the time they are made manifest at the level of the support staff. It is here that we see the fundamental dynamic of the institution---espoused self interest played out in it's rawest form. The reality is that had administration and the support staff any intention or been directed by policy to supply continual and thorough support Dr. Meaford's practice, support would have been implemented by now. Once again that what constitutes a system of support for Dr. Meaford does not constitute a system of support for the department. The current discourse in the department of internal medicine is that "patient satisfaction" is the driver. The support staff are getting a clear message from administration that the physician's needs are second to the patient's. For example, during the course of a session the up MA, who is supposed to be assisting Dr. Meaford with the clinical session, will in fact end up answering the phones along with the down MA. In other words the Up MA ends up supporting the down MA. The staff interpret Dr. Meaford's RTA protocols, for example triaging his mail, as being outside their job description. It didn't matter if Dr. Meaford's MAs had time to triage Terence's mail or not because the scope of her duties was not going to broaden to include it. When I arrived in Internal Medicine B to initiate my field work, the Senior MA said "We adore Dr. Meaford. We will do anything to help him he is so overwhelmed." I am not convinced that this was the case.

As demonstrated over and over again throughout the cross-section of systems of support, communication at every level is in default mode. This includes:
- communication between colleagues
- communication between preceptors and residents
- communication between the hospitals and clinicians
- communication with outside specialists
- communication between clinicians and support staff
- communication between support staff and administration
- communication between administration and clinicians
- communication between the patients and all parties noted above

Some of the reasons for attending issues around communicating are personal, some relate to the technology at hand and others still relate to the culture of managed care itself and the subcultures operating within it. For example, specialists when they call do not expect to be put off until later. Regardless of the reasons behind the default communication patterns, they net the same result, decreased efficiency.

Coiera pointed out in his research on communication problems amongst clinical workers in hospitals, that in the hospital setting "information and communication are deeply intertwined" (Coiera 1996). The same would appear to hold true for Terence's primary care practice. In the course of his research, Coiera noted that the preference between parties was for synchronous vs asynchronous communication. He attributed this preference to the pressure in such an event-driven environment to deal with events when they arose so that parties could tick them off their list. He noted further that parties for the most part did not reason about the consequences of their communication actions, for example possible decreased patient satisfaction. Coiera refers to this as "locally selfish" behaviour. If we look at Terence's practice, the advantages of synchronous over asynchronous communication appear enormous. It takes less time to relay idiosyncratic details about patients, and furthermore, the human exchange leaves no doubt that the message was received.

Even though en face communication is the preferred avenue, Coiera's research posits that appropriate and increased use of asynchronous channels such as e-mail and voice-mail can decrease the number of inappropriate interruptions and subsequently decrease the cost of both communication and information and other work errors resulting from unnecessary interruptions. Here in lies the crux of the matter. Communication is only as good as the channels by which it is travelling. Asynchronous departmental communication within Internal Medicine B primary practice community is unbelievably problematic. For example, the MAs do not have e-mail, patients do not have direct access to Terence's voice mail and Terence does not have access to his e-mail from home. Terence himself has cited the multiplicity of channels through which information comes to him and what an overwhelming task it is to just manage it: "Messages come to me through various windows. What I mean by that is I can get message slips through all the different sites that I talked about, and get someone to grab my arm in the corridor, and tell me something that isn't in writing. So now I have to either remember it or go somewhere and write it down, right? I can also get voice mails which accumulate until I get some time or other to listen and take them all down. I can also get QuikMails which are no, now I'm getting BB mails which is like QuikMail, which is on my computer. So I've got to pick up my phone and get all my voice mails, turn on the computer and get all my e-mails (which he can't print out), and then look at all my message slips to be sure "I'm not overlooking something, if you see what I mean. Oh, and finally there's the subject of mail itself." Although there are changes that Terence can make to improve communication in his immediate practice environment, (for example removing the Lucite box from the wall and mounting it on his door and labelling it for blue slips), the technology and the infrastructure required to meet the practice environment's needs lies within the domain of the departmental and organizational administrations.

From looking at the data we have been able to observe that when systems of support are either inadequate or lacking, default patterns of practice emerge. As in the case of communication, these default patterns can exist at all levels and do cut across disciplines, activities and modalities. Furthermore these default practice patterns have a negative effect on efficiency. To date default practice patterns can be precipitated by the following:

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1) If the participants do not have the support they need then they revert to the default. In Terence's case this means working harder and longer hours in isolation.

2) If the stress caused by the implementation of new organizational policies is too great the participants will revert to default patterns of practice. We have seen this with the MAs who respond to the organization's policy of pursuing patient satisfaction, the result being that the MA ends up answering the phones when they are supposed to be supporting clinical practice.

3) If there is no policy in place then there is no end of default practice as we have just seen with the MAs who "each had their own way of doing things".

The list of characteristics common to default practice patterns that we have to date include:

1   communication lacking or inadequate

2   leadership lacking, inadequate or nonexistent

3   working in isolation

4   local or idiosyncratic solutions to problems

5   dominance of personal criteria for change

The characteristic of course that is common to all of the above is as we have seen, particularly in the politics at the departmental level;

6   espoused self interest.

At this point I would like to return to the issue of implementation and explore it thoroughly. If the issues around implementation are not fully understood, then it will not be possible to design useful implementation readiness criteria.

Section 2
10 THE STOCKING THE EXAMINING ROOM INTERVENTION

We are now going to look at the Stocking the Examining Room Intervention (SERI). This chapter will proceed through the background to the intervention, the design criteria for it, an ethnographic account of the running of the intervention, and finally, an analysis of the issues around the implementation of the intervention itself. Additions to the list of characteristics that are present in default practice patterns will also be made. SERI provides an opportunity to revisit issues around implementation with the intent that the broader and deeper our understanding of the issues, the better able we will be to develop design implementation readiness criteria. The intervention will reveal more examples of how ill-prepared policy implementation by the organization results in acute stress for the parties. Furthermore, in the SERI we discover that it isn't just a matter of the systems of support not mapping on to one another but that they are in fact in conflict. The question then becomes: how do these conflicting or misaligned systems potentially impact on implementations? Additionally, if Terence is unsuccessful at implementing his systems of support from the bottom up due to the conflicting frames of reference, could the converse be true? Will the organization have trouble implementing their systems of support from the top down (namely Meta Systems) because of these conflicting frames of reference? This will be taken up in the conclusion of this section.

10.1 overview of the design process for the intervention

The design process of the intervention takes place on 2 levels:
1) The first level is the playing out of the intervention itself
2) The second level is the design process behind the intervention.
The objective behind the first level is to customise the fit between the implementors and what is being implemented and in doing so achieve as much overlap of the players' systems of support as possible. Even though the nature of SERI and the proposed Meta implementations are clearly different in scale and context, the "buyers" of the design are the same, and it is for the real "customers" of the design, ie. those executing the implementation, that customisation must occur. In the example of the SERI, Terence and the support staff are the customers. The objective is to: 1) to customise the fit for both Terence and the support staff ie; the support staff won't buy a design unless it benefits and improves their job, and 2) to achieve maximum overlap between Terence's SOS and the support staff's SOS, ie: a well stocked room supports Terence's practice and a seamless system for keeping it stocked supports the staff's practice.

The objective behind the second level runs simultaneously with the first level and relates more specifically to the design process itself. The second level is for data collection. As the implementation is being played out during the assessment of the problem, the collaborative design of the intervention, and the running of

the intervention, there is a concomitant process of collecting the data on the intervention, stepping back and then reflecting on the local problems, emerging patterns, conflicting frames of reference etcetera which in turn inform the next design decision.

Throughout the ethnographic account in this section I will stop and toggle back and forth between these two levels, the purpose being to emphasise and articulate the relationship between the process and the designing. The importance of doing so rests with the contribution that this designing process can make to enhance implementation readiness and the process of implementation itself.

Before proceeding with the specifics of the SERI I want to situate my approach to the research. It draws heavily on the established fields of Process Architecture (Porter, Horgen, 1998), and Action Science (Argyris, 1992). Fundamental to these research programs is the tenet of toggling back and forth between design and intervention. Donald Schön would call it "Reflection-in-Action" (Schon,1983), Chris Argyris would refer to it as "Double-Loop Learning". My modest attempt at this genre followed this well-trodden path. By virtue of being in the environment and trying to come to terms with why this system of support, the stocking of the examining room was in default mode, a design opportunity for an incremental intervention would present itself. Having put that intervention in place I would then step back and to see if it worked. Based on reflection on the outcome, I would then modify my design or continue in the same vein. In other words I did not enter into the examining room with an agenda, or a fixed design: the design evolved from getting to know the participants and what they did in those rooms, the supplies and equipment necessary to stock the room, where those supplies were to be placed when the stock order arrived and how this loop was going to be kept in place and functioning. The system of support that was being strengthened was directly tied to practice and the practitioners as were the tools that were designed to achieve that end.

10.2 Designing the Intervention

The choice of the stocking of the examination room as an intervention site satisfied the design criteria of both the aforementioned levels, running the intervention and collecting data, on three fronts:

1) The nature of the problem would facilitate a collaborative process between Dr. Meaford's support staff, to a much lesser degree Dr. Meaford, and finally myself. In fact the design of the experiment necessitated the staff's participation, particularly in assessing, designing and implementing the incremental interventions that I followed.

2) I wanted an appropriate low key, low-tech entry into the environment so that I could begin to understand how these systems of support overlapped and plugged into one another and how they reacted to new implementation situations. Focusing on stocking the examining room was less threatening for the staff and myself than, for example, an intervention with the Ready To Act protocols which would have

precipitated changes such as getting Dr. Meaford's MA of 8 years to start opening and triaging his mail. Additionally an intervention at the RTA level would also have required a significant investment in terms of time and input on Terence's part, and because of previous commitments, he simply wasn't available.

3) An intervention involving the stocking of the examining room required interactions with a broad cross-section of staff who either worked in or supported the department. These players, all of whom represented in their own right a system of support, included: the physician, MAs, IMB MA supervisor, MA supervisor, clinical supervisor, maintenance supervisor, maintenance workers and, the researcher.

These qualities inherent in the system of support lent themselves to playing out an implementation scenario that would allow me to collect data on the process and which in turn I would use for reflection and analysis, and to inform the next phase of the implementation.

10.3 SERI design objectives

As noted in the introduction, my motives were not entirely altruistic There was also a specific design objective for each of the two levels of inquiry that we have just established:

Level 1 related to the playing out of the intervention: was it possible to stock Dr. Meaford's examining rooms and stock them the same way and furthermore was it possible to keep the rooms stocked? Simply put, was it possible to alter and hopefully strengthen an existing system?

Level 2 related to data collection, reflection and redesign: what would happen at the point of implementation in the SERI intervention? What were the issues and dynamics around implementation? And would the parties involved resort to default practice patterns or would it be successful?

There were implicit and explicit perimeters to the intervention as well. Plainly the implicit intent was to enhance the performance of this faltering system. I did want to make it a better place for Terence to work in. The explicit perimeter of this project was cost containment. Not only was the center strapped for cash, ("our cost structure is too high"), but there was a good chance that the examining rooms would be undergoing major renovations when Meta Systems was introduced in 18 months to 2 years time. In order for any physical changes in the environment to take place, a strong argument for increased efficiency and productivity would have to be made.

The final item that I want to touch on before proceeding with the SERI is the use of "systems of support" (SOS). This was the tool that I used in the first section. Creating SOS as an analytical tool for making sense of complex work environments looked good on paper but would this unit of analysis stand up as praxis in the real world? In fact was a stocked examining room really a system of support for Terence practice? Was

this system of support networked with other systems of support such as the maintenance staff? How did systems of support work? Was the autonomy of these systems real or imagined on my part? In other words, was "systems of support" a useful tool and would it work? Furthermore, could the functionality of this system of support be analysed by focusing discussion around 'the right person for the job', 'espoused self interest', 'communication', and 'leadership'? How useful were these categories for looking at function as well as default practice patterns? and were there more categories that should be added to the list? Proceeding with the SERI was my chosen means of answering these questions.

Over the course of the intervention I carried out interviews, engaged in observation and participatory observation. I communicated with the participants by fax, phone and where possible e-mail and I used a combination of media: lists, photographs, drawings, workbooks and photocopied 1:1-scale maquette of the supplies. But there was no substitute for being there for the experience.

10.4 background to the intervention

We will now proceed with the background to the intervention by verifying the problem and getting the players' perspectives on it. Following the background we will proceed directly into the first phase of the implementation: finding an appropriate point of entry. An analysis of the two levels in light of the "entry" problems encountered, will immediately follow.

Dr. Meaford's perception of the problem

Dr. Meaford contended that the problem with the examining room was twofold: the rooms were not stocked nor were they stocked identically. " We have quite a few problems about the work-readiness of the workrooms, and one of the problems is we run out of all kinds of things that don't seem to have frequent enough restocking or exams to see if they're all stocked." ... "Another problem is that the rooms are not arranged in the same way, and part of that is idiosyncratic preferences of individual providers, but I will admit that although I have my preferences, at this point I would be happy to junk them in favour of uniformity." According to the clinician and the clinical manager, this problem was both systemic and enduring.

The MA supervisor's and Terence's MA's perception of the problem

The MA supervisor, who is directly responsible for making sure that the MAs stock the rooms, has a somewhat different take on the problem of the stocking of the examining rooms: "I actually think all your rooms should look the same. When something is gone you visually know." There had been efforts in the past on the staff's part to address the stocking problem. "We had a support person, she was a 'little organiser'. She did a lot of the rooms. Terence was one of the people who bucked her. She did it because she not only wanted the rooms to be uniform in IMB, she wanted them to be uniform in IMA so if IMB staff came down to IMA (as happened during Urgent Care Sessions), they always feel very confused because

the rooms are different. So the reason she did it was to have all the rooms the same. She had to get buy-in and I think there was only 2 people, Terence and someone in IMA who bucked it and said no. So that means that he doesn't benefit from the organization and she did a great job."

As for the MA who is responsible for supporting Terence's practice, from her perspective, there isn't a problem: "Everything he needs is in here. If he can't find something I show him where it is."

status quo:the stocking default

Dr. Meaford uses examining rooms #5 and #6. Occasionally he also uses rooms #3 and #4, but they are primarily the domain of the Nurse Practitioner. There was no discernible pattern as to how Terence's examining rooms were stocked. The location of the supplies varied from room to room and there were supplies present in one location and absent from the other. Sterile and non-sterile, burn and surgical supplies, bandages and unguents were all jumbled together. Expiry dates on some of the supplies were well past and some items had been so long out of use none of the support staff could identify what they were used for. None of the MAs knew what size of sterile gloves Dr. Meaford used. When I did ascertain the answer to this question from him (7.5), none were in stock. After canvassing Dr. Meaford's examing rooms I could in all conscience concur with his assessment of the situation: the rooms were not stocked nor were they stocked the same way.

status quo: the existing protocol

When I asked Dr. Meaford's senior MA what the protocol was for stocking the rooms she said that towards the end of the work week she would look at the rooms, check and see what was missing and then replace the depleted items from the utility room. This was done by sight, no free-standing or posted check-lists were deemed necessary. Having ascertained what was needed, the order was placed with the maintenance department on Friday and the order came in on the following Wednesday. It was accepted amongst the staff that the rooms would be stocked on Thursday, time permitting. The MAs pointed out that often it was the case that they had the time but not the supplies or that the order was incomplete and that left them short handed. Frequently there wasn't enough additional stock stored in their IMB utility room to cover stock shortages. The MAs compensated for these shortages by borrowing supplies from the department of obstetrics next door.

10.5 phase 1: the point of entry

compiling a list of supplies

I began with the rational approach. The first design decision was to get a copy of the list of the necessary supplies for Dr. Meaford's examining rooms from the staff. To my surprise I found that there wasn't an active up to date list. Taped to the inside of the upper right hand cabinet door in one of Dr. Meaford's examining rooms was a timeworn photocopied sheet of supplies and where in the room the supplies were

to be located. There was little correlation between the the sheet and the placement of the contents of the cupboards and drawers. There was also a sign-off sheet adjacent to the supply list where the MAs were to initial and date when the rooms had last been stocked. This was empty. Compiling a comprehensive list was up to me.

comparative analysis of all the examining rooms in IMB

My next step was to carry out an informal comparison of all the examining rooms in IMB, of which there are 8. In IMB no two examining rooms are identical, nor is the stocking of them identical. Even exam rooms stocked by the same MAs were different not only in layout but in the completeness of the supplies. When asked about this the MAs pointed out that different doctors were experimenting with different arrangements. For example: some clinicians (female) preferred to locate the materials for the pap smears in the bottom drawer of the examing table where the supplies had the advantage of being ready to hand but had the disadvantage of having to ask the patient to move their feet (think stirrups) in order to access the drawers. The male clinicians preferred to have the pap supplies in one of the drawers in the sink unit. For a newcomer like myself, the pervading lack of order and degree of inconsistency from examining room to examining room was simply overwhelming.

The least variation in the stocking of the exam rooms occurred in those used by the only other male physician in IMB. His rooms were stocked by the head MA for IMB, and although the rooms varied in their configuration, one of them being a treatment room, the viewer was presented with the impression that there was a set pattern in the positioning and quantity of supplies. His examining rooms looked orderly and well stocked. His rooms also had items that the other examining rooms lacked. For example, in each room there was a large free standing garbage pail to accommodate the lengths of paper used to cover the examination table. The other MAs were particularly covetous of these garbage pails because the standard garbage pails the rooms were equipped with were attached to the door below the sink. These were awkward to use and too small to contain the reams of paper from the examining table that accumulated throughout the day. This physician also had a wall-mounted plexiglass display unit filled to the brim with educational material in several languages. In fact each of the examining rooms had items that were specific to the patient population that the physicians were servicing. One had pamphlets on smoking cessation and medical alert bracelets displayed prominently. Another had information on birth control, pregnancy and menopause etcetera. All the examining rooms had a calendar.

criteria breakdown

I kept looking for discernible patterns-of-use to emerge, which would then give me some indication as to whether or not a certain item was generic to primary care practice. (I had assumed that if all clinicians used tongue depressors they would be kept in the same place: apparently not.) In going from room to room to compile a comprehensive list of supplies I became as confused as Dr. Meaford. Aside from familiarising me with the select "islands of order" from room to room, my list making methodology proved useless. I didn't know what the vast majority of supplies were used for, so to me their placement didn't make sense. In

other words their was neither an intuitive sense of order nor an imposed system of order in the examining rooms. More importantly, my rational tool, the list was totally useless because it wasn't in any way reflective of the actual practice.

10.6 phase 1: the point of entry: analysis

We will now stop briefly to illustrate the two levels of the design process that are being carried out in tandem.

Level 1 related to the playing out of the intervention: First I verified that there was in a problem then I chose what appeared to be the rational starting point and proceeded to fail, miserably I might add.

Level 2 related to data collection, reflection and redesign: Yes, I had failed but maybe this is one of the reasons why there had been such a high turnover in that 4th MA position. I came to the stocking of the examining room with the same level of expertise that the new MA did: neither of us had been in an examining room in any capacity other than as a patient. I came from a background in the visual arts, she came from auditing. So this is what the new MAs experienced when they started on the job!

10.7 phase 2: participatory design

By the end of phase one I had come to the conclusion that the rational approach was the wrong approach. Furthermore during the process of reflecting on what I had experienced I realized that implementation of the tool had failed because it was developed independent of both the users and practice. I then design a fuzzy interface that met this new criteria. Again an instance of the design process will be touched on at the end of this phase.

participatory consultation

Undeterred I then photographed the existing "islands of order" that I had noted and I compiled the photo-observations in a 3 ring binder. I pasted a photo at the top and spaced leading questions down the page. For example: under the photo of the cupboard under the sink housing a Hazardous Waste container with it's lid off and used empty plastic bottles beside it were the following questions which were then answered by the MAs.

Question #1: Can the design of this hazardous waste container be improved on?
answers:　　　　1) "Yes, should have a lid",
　　　　　　　　2) "Container with foot pedal".

Question #2: Is this hazardous waste can the right size?
answer: 1) "Yes".

Question#3: Should it be located under the sink or next to the examining table?
answer: 1) "Next to the examining table".

With the binder in hand I trailed after the harried MAs while they went about their work. During intervals spanning anywhere from a few seconds to several minutes the MA's consulted the photos, considered the questions and gave primarily verbal responses which I recorded while they continued answering phones or escorting patients to the examining rooms. This exercise made me acutely aware of the fact that the maximum amount of time that lapses between demands on the MAs is never more than a few minutes. After the 2 MAs working with Terence's practice were familiar with the binder and the kind of feedback that I was looking for, I left the binder with them for a two week period and encouraged them to make entries on their own. Over a period of several visits I garnered the feedback that I was looking for.

consultation results

The MAs' suggestions on how to upgrade the efficiency and functionality of the examining rooms were rooted in their practice: "move the soap dispenser over to the side because soap drips all over the supplies and then we have to spend time in between patients cleaning them off." "Put a divider vertically down the center of the drawer for the disposable specs because that is how they come out of the package." or "Get a free standing garbage can with a lid because the ones without lids look very unprofessional." or "Dr. Meaford's patients are very elderly and would really appreciate a pillow so why not have a wire holder attached to the head of the table instead of keeping the pillows on top of the cupboard where no one but X can reach them." As the work progressed and the reality of its potential set in, the MAs became increasingly curious and wanted to know if it really was possible for these things to happen, to get those free standing garbage pails like the other doctor's'? When I asked why they didn't just order them they rolled their eyes to indicate that I would soon find out and kept moving!

photocopy maquette of the supplies in situ

Prolonged discussion or feedback from the MAs on what the supplies were used for and how to organize them was out of the question, so I decided to photocopy all the supplies to scale and mount them on pieces of tracing paper that were the exact size of the shelves and drawers. This amused the MAs to no end but it also had the added advantage of facilitating their feedback and input into the design process and situating the supplies in my mind. By posting the mockups in the examining/administrative room across from their workstation the MAs and I were able to physically evolve a placement of the supplies over time until a consensus was reached as to what would go where and what additional shelving was needed. One of the points that this process brought home was the fact that there were too many things crowded together on the counter top and open shelf unit next to the sink to be able to tell at a glance if anything was missing. From our experience with the maquette it was determined that we should extend the little

shelf the width of the sink unit. The MAs were free to draw and write on the maquette. The hands-on interface; being able to rip bits off and relocate them was in keeping with the inherent "hands on" demands of their job. This format had the added advantage of being mobile. Once again I could dog their steps with the mockup of the drawer in hand and get their input on the fly.

10.8 phase 2: participatory design: analysis

The process of participatory design continues throughout the entire intervention but for the moment we will stop and look at the design criteria for the tools that have just been designed and implemented.

Level 1 related to the playing out of the intervention: My reasons for photographing the successful bits and pieces from all the examining rooms and presenting them as "a composite examining room" and then subsequently photocopying all the supplies were threefold:
1) first and foremost I wanted to take an approach that would engage rather than alienate the MAs. The last thing I wanted to do was present as an urgent interruption. I wanted to engage in a process which included opportunities for reflection,
2) the photo-collage of "the examining room" would high-light the fact that the examining rooms were all different and hopefully lead to discussion amongst the MAs as to why they were different and what would be the advantage of having them the same,
3) I wanted to open the MAs up to the fact that things were going to change in Dr. Meaford's examining rooms and that the they could take an active role in the process.
All three of these design reason, were aimed at moving the implementation along.

Level 2 related to data collection, reflection and redesign: As noted earlier I had clearly underestimated the complexity and the chaos of the examining rooms and at the end of Phase 1 I had been charged with designing a fuzzier interface, one that was tied to both the practitioners and to practice. The photo-collages and photocopies were just that. Their design had been based on Terence's criteria for change: at his pace, incremental, staggered and built on existing strengths. There were little islands of order in each examining room, short strands that visually appeared to make sense. For example, having the hazards pail beside the examing table ready to receive the used speculum, or having the hammer and tuning fork out on the shelf or counter so that you could tell at a glance if they had "walked off". I started with what appeared to be the "best practices" in the various examining rooms and built on those. I knew that the two interventions were successful when I started to get the data, the changes for the MAs that would make the stocking of the room easier and all in all a more attractive proposition. In getting the MAs to articulate their preferences I could select and encourage movement towards those that also mapped onto Terence's expressed need for the uniform stocking of the examining room as a system of support.

Before proceeding with phase 3 I just want to stop and illustrate how the running of the implementation at Level 1 feeds into the design of tools. As noted at the beginning, my first tool, the list failed. The idea of having that list was a good one: the way I went about getting it initially was not successful. Based on the data that I was collecting I was able to go back and redesign the list. Something that would facilitate both the new and veteran MA.

The design entailed evolving a "visual order-form" that provided the MAs with a visual cue as to what supplies needed to be ordered and where the supplies were to go once they got them. The design entailed putting the images of what was to go where on the inside of the cupboards and drawers on the actual ordering form so that the staff could see at a glance what was missing and replenish it. The demands of their job were too peripatetic to allow them to toggle back and forth between a list and a location: images were much faster than text to reference. The MAs were virtually unable to complete any task without being interrupted by fellow MAs relaying information, patients requiring assistance, the phones ringing, or a physician standing by with a request. In other words the design of the interface had to support their activity. The proposed design of moving from text to image and back to text would have the dual advantage of speed and hopefully the placement of supplies would become ingrained through visual repetition. At a glance the MA would be able to ascertain what was needed, high-light it and not have to worry if she was interrupted before she was able to restock the items. This placement of supplies could then be replicated on a stocking cart that could be stored under the counter in the utility room. Having the cart stocked the same way as the shelves and drawers would reinforce uniformity in the rooms and also facilitate the act of stocking. The utility room where the overflow of stock is kept was also short on organization. Given the lack of infrastructure it might very well be more efficient to keep a cart stocked and ready to wheel down to the examining room than to make repeated trips back and forth with all the supplies that had been depleted.

10.9 phase 3: implementation

This section will take us right to the end of the implementation where we will pause briefly for another note on the 2 levels of the design process before proceeding to an analysis of the dynamics around implementation.

intervention A: small and simple

The next step in the intervention was to make the MAs' suggested modifications to the examining rooms a reality. We proceeded to make the changes that didn't require physical renovations. A variety of containers to consolidate certain groupings of supplies such as surgical supplies, burn supplies, tensor and cling bandages, etcetera, were purchased and tested for appropriateness. Were they the right size? could they be labelled easily? and so on. The supplies in the two examining rooms were reformatted and augmented so that they were identical. Temporary labelling was put in place; it would be formalised after a

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trial period. I knew we were making progress when the senior MA on Terence's team took me aside and said, "You know when this is all done I'm going to talk with the Nurse Practitioner and see if she would like her rooms stocked the same way. It would be easier and all the rooms on our side would be stocked the same way." I then turned my attention to the maintenance crew.

intervention B: the maintenance players

Early in December one of the maintenance workers and I toured the examining rooms in question and reviewed the work to be done. Two weeks later nothing had transpired. I then tracked him down and he said that he had been very busy and in the meantime had forgotten what the entire job entailed. He then introduced me to the other maintenance worker who then came and reviewed the work with me. Towards the end of our meeting we were joined by the maintenance supervisor and the original maintenance worker. All three of us revisited and reviewed the work to be done and the supervisor confirmed that it would be undertaken. The first item on the list was Dr. Meaford's specific request, the remaining requests originated with the MAs. The job included:

1) move the Lucite box from the hall wall to Dr Meaford's door
2) relocate the soap and towel dispensers and sharps container in the examining room
3) extend the shelf over the sink
4) provide a large freestanding garbage pail with a lid
5) order and install a pamphlet display unit like the ones used by another physician in IMB
6) order and install a pillow holder to be attached to the head end of the examining table

To the delight of the MAs and Dr. Meaford, the task of moving the plexiglass holders and the soap dispensers/towel dispensers and sharps containers was undertaken the very next day. The remaining items on the other hand took 5 months to complete.

reaching an impasse

When I returned to Boston in February after the school's winter break and called maintenance to confirm that the work had been done, the worker who picked up the supervisor's phone was most apologetic. With the exception of the work completed in the first 24 hours, "the rest seemed to have slipped through the cracks" but "they were going to address it". I asked if they needed any additional information and the worker said "yes, in fact I know we talked about that shelf over the sink, but I forgot what we talked about and I was kind of hoping that I could get to Dr. Meaford before you came in." The maintenance man went on to say "you know, it's embarrassing to admit but after 10 years we're going to have to ask people to put things down on paper, get more documentation because, you know, if it isn't an emergency then things well, they just slip between the cracks."

I met with the maintenance man the following morning and we revisited the extension of the board over the sink and the issues of the pillow holder, display unit and garbage pail. Somewhere in the background lurked the problem of who was going to pay for it. Was it going to come out of the maintenance budget, Internal medicine's budget or was maintenance just going to spend the money and see? Added to the mix was the concern that if Dr. Meaford got these changes, did that mean that requests from other doctors would follow suit? These were questions that were raised by maintenance with every intervention that required their involvement. There was no forthcoming explanation as to what arrangements the other male physicians in IMB had made to garner an equivalent display case and garbage pail.

We resolved that I would check in with maintenance by phone the following day and by then he would have consulted again with the maintenance supervisor for a time line on the work. The following day, Friday, I was unable to reach either the maintenance worker or the supervisor by phone. I left a message on the supervisor's answering machine. It wasn't returned. The pattern was set. Communication by documented drawings, phone or fax was by and large ignored. Getting results meant "being there". As noted earlier it took 5 months before the work list was completed.

impasse complete

By the middle of February 1998 the intervention appeared to have failed. The physical alterations in the examining room, notably the free standing garbage cans, the extension of the shelf over the sink, and the pamphlet holder had not appeared. Although the maintenance staff were always pleasant and accommodating; "things were on order", "yes, when the carpenter gets here from the other center", we were not making any progress. Furthermore I had reached an impasse with the senior MA who supported Terence's practice. This became apparent on 2 fronts:

1) Within the chaos of the examining room, the senior MA's locus of control, her "island of order" , was limited to the placement of supplies necessary to set up for pap tests. In her mind the placement of these requisite supplies was immutable. Everything else could be changed. In fact she had been very involved in the process of deciding on the right containers and determining the general groupings of supplies, but the supplies for the pap had to stay in the location designated by her, ie. exactly where they were.

2) Furthermore, it became apparent that her "island of order" was the only aspect of the examining room that she consistently kept stocked. I don't think she could even see that the selection of cling bandages had been depleted or that the nasopharyngeal swabs were all gone. Items external to the paps "did not exist". The MA supervisor described Terence's MA as "the type who doesn't jump ahead and she is the type of person you have to say "this is missing, this is missing" and it will eventually click into her head that maybe I should stock these rooms." Terence's MA was not going to maintain the improvements nor was she going to initiate new ones and furthermore she could be relatively sure based on past experience that none of the supervisors, the head MA in IMB, the MA supervisor for the department or the clinical supervisor was going to require it of her.

By the beginning of March 1998, IMB had a new clinical supervisor, a new MA supervisor, and a new female physician. The department had gone from 2 teams of 2 physicians to 1 team of 3 physicians supported by one NP soon to be joined by yet another who would take on the responsibility of Urgent Care. The department was also interviewing for a RN to be shared by all three clinicians. Concomitant with all this change was the restructuring of how the clinicians were to be supported. Under the new regime each physician was assigned their own MA who would be in the up MA position whenever their clinician was holding a session. By request, Terence was assigned the junior MA and the senior MA was assigned to support the new female physician. Ironically the change in the MA coincided with the long awaited changes in the examining room put in place by the maintenance staff.

system implementation

The intervention was back on track. The new MA was so overwhelmed with the volume of paperwork generated by Terence that she was more than grateful for any input or assistance with the examining rooms. We proceeded to evolve both the stock and it's placement. I would store the examination gowns in the cupboard under the examination table and when she became tired of bumping into the door every time she went to retrieve one, the gowns migrated back to the cupboard in the sink unit and the change was duly noted on the stock/location list that I was compiling. And so it went until the environment reflected its usage. It both looked orderly and the location of supplies was intuitive. The MA was then armed with a comprehensive supply list that noted both location and suggested amounts of each supply and a highlighter colour coded for each room so that the missing or depleted stock could be highlighted and the MA could work her way down the list as time permitted. The pens and the list were stored in a temporary carrying basket for the supplies under the sink in one of Terence's examining rooms. The challenge then became how to pass information on to others who might be setting up or stocking the room.

communication problems

There were repeated indications that passing on information specific to the stocking of Terence's examining rooms was a problem. There was no three ring binder with this kind of information, or web site profiling how to support Terence' s practice style that incoming staff could reference. The department had a series of MAs in training. On one occasion I went into the examining rooms and the MA-in-training had solved the problem of no pillowcases by positioning the pillow under the paper covering the table. The disposable pillow cases were in the drawer of the examining table right underneath the patient's head (so much for the intuitive test!). Another time none of Terence's pillows were to be found. They were eventually located in the cupboard behind the MAs desk. Another time Terence caught me in passing and noted that he thought the new location of the sharps container was dangerous because when he sat down he had bumped his head. How could this be that he would roll his stool underneath the sharps container where the new garbage cans were scheduled to go? I proceeded to the examining room and discovered that his stool was missing and that a regular chair had been substituted and placed underneath the sharps container. I looked around and discovered that one of the staff had taken his stool and was using it at the receptionist's front desk!

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Clearly there were problems that extended well beyond the scope of simply keeping Dr. Meaford's examining rooms stocked and stocked uniformly. It was now time to hand the baton (stock list) over to someone else. The opportunity to do so presented itself when I met with the head of maintenance and the clinical supervisor regarding the proposed upgrade for Terence's office. The new clinical supervisor, the new MA supervisor and Terence's new MA all avowed an interest in systems and cited the need to develop infrastructure in order to address systems problems such as the stocking of the examining rooms. This is the direction that they were moving in when the intervention ended.

10.11 phase 3: implementation: analysis

Before proceeding with the analysis of the SERI I want to take one more cross section of the process of design and how it is applied to the redesign of this intervention.

Level 1 related to the playing out of the intervention: The final and very important aspect in this layer of the design process is the role that the designer has to take on. The goal at this level of the design process is to play out the implementation, warts and all. It was only by taking the lead, by persisting with the maintenance department that I was able to generate the data that I needed in order to reflect on some of the issues that impact on implementation. This particular example of leadership and the contribution that it makes to the team dynamic will be followed up more fully in the final analysis.

Level 2 related to data collection, reflection and redesign: At this level of the design process I want to highlight the collaborative design process that occurred between the new MA and myself in the implementation of and evolving placement of the stock. This is what it looks and feels like when systems of support map readily onto one another. This is the level of buy-in from all parties that you have to have in order for successful implementation to take place.

We will now turn our attention from the ethnographic account of the intervention and notes on the design process to an analysis of the SERI.

10.12 SERI analysis

In answer to my first question; Yes, it was possible to get Terence's examining rooms stocked and stocked as similarly as possible given the structural differences in the rooms. But no, it was not possible to keep them stocked without "buy-in" from the key system of support, namely the department, in which the examining room as a system of support was embedded. Keeping the examining rooms stocked required an infrastructure that was well beyond the shadow cast by Terence.

In answer to my second question, "what would happen at the point of implementation? Would the parties involved resort to default practice patterns or would it be successful?", the answer again is both yes and no.

Default practice patterns did emerge but not where or in the form that I expected them. As a case in point, I will return later to look specifically at the maintenance department and the support staff , and will analyse both of their roles in the implementation process. I want to look particularly at communication and leadership characteristics that are common to default practice patterns.

right person for the job

When the SERI was designed I had no idea how much implementation depended on having the right person in the job. How could this be that you could have employees who elected not to perform a critical aspect of the job: keeping the doctor's examining room stocked? I checked the MA's job descriptions and MA supervisors as well. There it was in black and white, "prepares and maintains exam rooms". I then asked the clinical manager, the outgoing MA supervisor and the incoming MA supervisor why the examining rooms weren't stocked They all noted that the calibre of staff holding down MA positions was a direct reflection of what the position pays. The outgoing clinical supervisor put it bluntly, "To me it is quite simple but it's also quite simple when I look at the child care problems. If you pay someone $5 dollars an hour, you get $5 dollars an hour worth of care. And that's very much what I see going on here. We have folks that have been with us for eight years and they're not making $11 an hour. Figure that out. For me that's the lion's share of the problem." She then went on to tie the hourly wage in with the kind of individual the job attracts: "So you're paying and you're getting a level of work ethic, responsibility, that one of two things are happening: you're either getting someone like Terence's new MA who is willing to take the cut in pay for the value of the experience so she places great value on that but makes no bones about the fact that she will be moving on to bigger and better things and the payoff for her is that she is going to take experience that you can't necessarily put a price tag on. Or you get the person who sees this as an end in and of itself, and you're dealing with a person who, the ownership piece, the responsibility piece the initiative, the problem solving, the systems improvement piece, not at all in their repertoire, not interested in developing it, that they are much more a technician, they just want to, you know, put the pegs in the holes. I think that is part of where this stems from, you're asking for a level of ownership and problem solving from people that you don't pay enough. You're not attracting a quality work force. If you could make this a career choice vs a job, you would get career level problem solving and career level systems vs just passing through or dead end." The outgoing MA supervisor agreed, "the calibre of people they want they need to pay $15 an hour - we're not getting them." She goes on to say that, "most of the candidates went to an MA program for a 6 month or 2 year period. They haven't had a lot of experience out in the working world. They're single parents who are looking for a field or trade. They have a hard time getting here on time. They have a hard time understanding rules and regulations. I spend a lot of time on discipline, just teaching them the way that it's supposed to be." The clinical manager pointed out that support staff might be an area where the PMO is going to have to assign additional funds.

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motivation

In addition to the issues around wages and the calibre of individual that the MA position attracts is the issue of motivation. The MA supervisor points out that the clinical staff doesn't motivate the MAs and neither does the company as a whole, "I don't think Huron has been giving huge raises or, they're not motivating these people to do a whole lot and that's what I found hard as a supervisor. They're not motivated financially or there's not this wonderful enthusiasm in this company right now, everyone is kind of like nervous. So people like Terence's senior MA stay." This lack of enthusiasm is evident in the very fabric of the Physician-MA relationship. When I asked the clinical manager why there wasn't any evidence of "teams" she replied, "These folks here work very, very hard and they're not rewarded financially and they're not rewarded by a cup of coffee, "great job today", just even commiserating would be a sense of a pat on the back like "wasn't today brutal!" When Terence spoke about team work he talked about his relationship with his colleagues. When the support staff talked about team work they framed it up in terms of supporting Terence. In other words the MAs concept of team is vertical and Terence's concept of team is horizontal. I don't think either of these models are conscious, note the clinical manager's perception re same: "There is this belief here that their structure is uniquely flat . It is a real shock to them (the physicians) when you say "the MAs don't feel that way." or "that's not real." This cognitive dissonance over the concept of team might be another feature to add to our list of default practice characteristics.

passing the buck

In terms of the SERI experiment I am not convinced that the problem with the first MA revolved solely around a missing skill set "the initiative, the problem solving piece", I think that one reason for implementation failure might have been that there was no infrastructure in place to give the "MA culture" cohesion: stocking the exam rooms was not seen as something integral to being an MA. Having impeccable people skills to interface with the patients was; running a smooth, well stocked organized clinical interface was not. But this line of inquiry made me dig a little deeper: was the resistive MA really resistive or was she in sync with administration. Unstocked examining rooms had been an ongoing issue in the department for years. Furthermore it is an issue that effects physician efficiency which in turn effects productivity which, if it can be increased, decreases the cost structure, which is the organisation's espoused goal. If physician efficiency really was a priority for the organization why wasn't this issue being addressed? The only answer I could come up with was that I was witnessing a "sanctioned default" made possible by organizational policy. The examining rooms were clearly a long-standing low priority. The MAs could not be asked to increase its priority because they already had too many priorities. The stress placed on the physician was not feeding back into the organisation's policy-making in any significant way, and thus the job allocation and work scheduling was consistently allowed to let this slide. Dr. Meaford was essentially placed in a position that he was unwilling to act on: the position of having to either "manage" the staff himself, or go over their heads to lobby the administration for change. But why?

leadership, power and commitment

This brings us to an issue related both to managing staff and having the right person in the job: leadership. As noted in the preceding text, leadership at even the lowest departmental level was a problem. In effect there was no supervision for the stocking of the examining rooms. We will start with the senior MA in IMB who was directly responsible for overseeing the stocking of the examining rooms. Although the Senior MA's, people skills were exceptional, she shied away from the supervisorial aspects of her job. My impression was that she found it extremely difficult to deal with confrontation over any staff issue that might "rock the boat". She was working with a core of 2 other MAs, workers who had been working closely with her for the last 8 years. Those 2 co-workers and their habits were firmly entrenched. As the incoming MA supervisor noted, "They (the senior MAs, 1 in IMA and 1 in IMB) have done nothing with the role. Basically these girls were MAs who were promoted. They've never really found a job description and they're making more money than the rest which, and they're wonderful, they're great MAs but I think we need to be creative with their roles, we could do a lot and both of them are looking for more. They're excellent but it's time to sort of give them some meat." This quote typifies the dilemmas that the staff in managerial positions were facing at all three levels within the department. The senior MA, the MA supervisor and clinical supervisor had all been promoted to their positions from within the ranks at Huron Health. Therefore it is not surprising that as a group that worked closely together they were unable to wield the power that was befitting of their new positions. Their strengths and weaknesses were too familiar to the staff working for them. But the supervisorial staff weren't the only ones accused of being too nice to map out a program and have others follow: "He (Terence) is a person who likes things the way he likes them, but he is so grateful that you tend to do for Terence, but I also think that his kind, compassionate, personality allows someone like his (senior) MA to kind of be lazy, unfortunately." Implementation appears to require a certain level of leadership. In the medical informatic literature they cite this as being a critical factor in successful implementation: people must be identified as holding specific positions concomitant with very specific responsibilities (Tierney 96), (Hammonds, 1995), (Coiera, 1996). As has just been seen, the senior MA had the title but she wasn't taking on the job.

espoused self-interest

In the course of strengthening one system of support for Terence, the stocking of the examining room, we looped into another system of support, the maintenance department. At the onset I had explained to them that I was working with Terence to improve the efficiency of his practice so that he could see more patients with greater ease. Although they nodded their heads I suspect that running in the background was a little voice saying, "if we wait long enough this woman will graduate and go away!" I proceeded by keeping the big picture in the foreground: I wanted to get those renovations to Terence's examining rooms done. No one other than a student would have been able to devote the time and energy that it took to shepherd that work order along. Although the maintenance department would contend that "things slipped through the cracks", a more accurate description might have been that "they were dropped

through the cracks". It wasn't that they said no, their strategy was just to not do it. Terence's new MA placed an examining room stock order for room deodoriser and bactericidal spray, neither of which had appeared to have been ordered before. A month and a half later they still weren't included with the restocking order, nor was there any reason given for why they weren't.

But what is going on here? As a system of support, where was this group on the spectrum? The maintenance department presented as a very cheerful, clever, self contained, well organized, self-regulating, technically well equipped team with a certain vigilante flair. This impression was heighten by the fact that whenever a modification to the examining room was discussed there was a certain amount of expository discourse on their part as to who was going to pay for the garbage pails or the pamphlet holders. Was the money going to come from their "capital" or "expenditures" budget? Was the department going to take it on? Or were they going to do the work and just wait and see? I found it hard to believe that there wasn't policy at some level dealing specifically with the allocation of expenditures. I left the intervention asking myself, what dynamic in the organization was facilitating this kind of autonomy and why was that amount of power residing with this group? What I didn't understand was: Why did they appear have so much control over their domain and Terence have so little over his? Could it be that the maintenance department was completely in sync with administration or was this a stellar example of the default practice pattern of practising in isolation? In Terence's case, being isolated meant working harder. In the case of maintenance, working in isolation meant being able to configure your job in such a way that you could maintain your autonomy. This implementation dynamic was very perplexing and one that I didn't fully come to understand. The medical informatics literature points out that if you're committed to change then you focus on issues around implementation, if you are not committed to change then the discourse focuses on the pros and cons of the proposed changes (Valenta, 1996). Terence and the new MA whose values and work ethic were more in line with his, were committed to change and took every opportunity to focus on the issue of implementation. The maintenance department on the other hand effectively kept change in a holding pattern by filibustering at every stage over the pros and cons. As a result, they seemed to have established a default pattern of "low expectation-low result", with pressures for performance and change kept at a minimum.

communication and communication aids

In the SERI, communication issues impacted directly on implementation. In the first section of this thesis Terence, cited his concern about the number and deployment of the support staff in the department. Were there too few, or was the problem deployment? The answer in part might lie in a closer examination of the marked patterns of interruptions or "local selfishness" that the support staff was constantly subjected to. Surely these interruptions, precipitated by the need to communicate, impacted on efficacy and efficiency. Although the staff appeared highly skilled at exchanging information verbally, the same was not true for information that needed to accessed asynchronously. There is no infrastructure for passing on asynchronous information. Terence has no reliable or readily accessible means of passing information about the examining room on to the support staff. Nor were there synchronous or

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asynchronous protocols in place for the MAs to exchanging information about Terence's practice style and how to support it. There was no "manual" for the MAs to refer to concerning stocking the examining room or ordering supplies. Nor was there a source to refer to as to where to put the supplies when they did arrive etcetera. When I asked the MA supervisor how incoming MAs were trained she said: "I like to teach by example" and "I like to model". This approach could be augmented with something more concrete such as written protocols or manuals.

An alternative or complement to the manual would be a virtual resources, a web site replete with information on Terence and his practice with an interactive interface so that asynchronous communication was facilitated. The MAs, who as a group used the electronic booking system constantly, in fact more so than any other group working in that environment were the only folks not to have computers. The MAs were still using terminals long after the clinicians and administrators had their new computers. If the MAs had had computers they could have had chat lines with their physicians, up and running during the clinical sessions so that the physicians could log on at any point in time and register their needs and queries? I cite the possibility of a Physician Practice Support Web site and the use of a chat line because they are systems of support that can be bought off the shelf and developed independent of when Meta Systems gets there and what Meta Systems can offer. The advent of Meta Systems has occluded the environment's ability to think creatively and economically about what they can do now. One of the erroneous assumptions around incoming technology is that the technology is going to solve problems. As they say in the industry, "technology doesn't solve problems, people do". I would like to suggest that this adage also applies to communication channels.

change

As in the RTA protocols, the issues around change emerged and they too effected implementation. In the SERI, it became evident that unless the MA got the very clear message from the supervising MA in IMB, the MA supervisor and the Clinical manager, that things were going to change, everything was going to stay the same. I think there were both individual and institutional reasons why the department was frozen or as those in management would say "autistic", unable to learn from it's mistakes. The out-going clinical manager summed up the dynamic: "Part of my consistent frustration with this and other supervisorial positions that I've been in is that there isn't or I've not made the time to do the big picture problem solving. This to me is the putting out of the fire but there is nothing in this process that prevents the fire from erupting again. That is a lot of what we do here." So what would be some of the reasons for the department being stuck in this default practice pattern? Was putting the supervisorial staff in a position of putting out fires an organizational strategy for bringing action in line with policy? Or is it a higher layer of default practice, ie the absence of clear policy and its execution? Or are all the job descriptions too vague, and everyone too overworked? Or are we seeing the results of penny-pinching in the organization's human resources policy?

loading up the MAs

The MA's position is very complex. As the out-going MA supervisor pointed out, "the MA position is a tough, tough, tough position you have a lot of customers, the clinicians are your customers, the patients are your customers, your peers are your customers, I am someone they have to please. There are a lot of people that they have to please." The MAs are a system of support for many parties with disparate interests. If they alter their role in one of these systems of support it impacts on their role in the other systems of support. A timely example of this is MA's part in the third party billing that the care unit is responsible for as of April 1st 1998. Because of this new decentralised policy, namely collecting additional information from patients regarding billing, phone conversations and face to face interactions are extended. This incremental increase in the MA's workload impacts on all the other systems of support that the MAs are a part of. It means that the Up MA has even less time to respond to Terence's needs, it means that the bottleneck with the phone lines is even worse, it means that the patients wait longer in the waiting room and on the other line, and the list continues. I am attempting to illustrate 2 points here: 1) that change is occurring but it is change that results from business decisions, not clinical practice priorities, and 2) that changes to the clinical support system, "big picture problem solving" as the Clinical supervisor calls it might in fact be counter productive to the organization's bottom-line goals. In other words from Terence's local perspective, implementation problems could be attributable to the fact that his systems of support did not readily map onto the organisation's priorities, therefore his needs were basically ignored. However when the situation is inverted, as in the example just outlined, he can't ignore it because this policy that is being implemented makes the systems of support for the physician even more stressed. The dynamics around implementation are presently escalating to the point of an outright conflict of agendas.

10.13 unexpected finding

the primitiveness of the primary care practice environment

Why was I so surprised at the lack of infrastructure and the primitive state of the support systems in this environment? I think in part it is because we come to the medical environment with the expectation that it is sophisticated in every sense of the word. It is a shock to discover that the 55 year old physician at the peak of his career, with an earning capacity in excess of $150,000 a year doesn't have the support in the medical environment that he would get in industry or even on the administrative side of the organization. This clinician is functioning without the equivalent of a secretary let alone an office manager. In terms of technical support, he doesn't have access to the communications resources that probably 60% of his patients have at their disposal either at home or at work[2]. The point is that the assumptions that I made about the primary care practice environment may be erroneously shared by the designers and implementors of information technologies.

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2 Healthright surveyed it's member population and determined that 60% had access to the internet at home or from the office

SECTION 3

11 WHERE THE RUBBER MEETS THE ROAD

Following is an overview of the ways in which Terence predicts Meta Systems is going to impact on his existing systems of support. Having laid the groundwork with the overview we will then compare a specific function of the present electronic medical record (EMR) ABMII with the incoming EMR Meta Systems. The particular aspect we are going to contrast is the "charting" of the patient visit. Following an analysis of the differences we will move on to the final chapter in the thesis, the implementation readiness design criteria. At the end of the preceding chapter it was pointed out that from Terence's local perspective, implementation problems could be due to the fact that his systems of support did not readily map onto the organisations systems, and therefore his needs were basically ignored. If the situation is inverted as it will be when the organization introduces its Meta Systems, the dynamics around implementation escalate to the point of outright conflicting frames of reference. In this section we will be looking at the anticipated depth of and reasons behind these conflicting frames of reference. Furthermore we will project how they might impact on the implementation of Meta Systems.

11.1 Terence tells it how it is

Meta Systems is big and inevitable

Dr. Meaford maintains that Meta Systems is both big and inevitable: "Well, Meta Health is an enormous change in the way we practice medicine and it seems to be coming no matter what, and we have to make a virtue of it because it's coming regardless." Terence goes on to say that "nothing as big as this has ever come along in my practice that I can think of, in 30 - 25 years here." The advent of Meta Systems is deemed inevitable for 2 reasons: 1) the first being that Healthright Plus has to do something about their computer system before it crashes and, 2) the organization appreciates the potential for a significant reduction in costs associated with the use of these technologies. Health care consulting surveys estimate that on a national basis annual cost reductions of more than $36 billion are possible through the effective use of information technology (KaiKai 1995). Meta Systems is exactly the kind of information technology they are referring to. But Terence's concerns are more pragmatic and focused on the end user-interface : "It's big, the point is that this is so global. It's either going to be so wonderful or so catastrophic. It is not a little thing."

Presently Huron has an automated record system called ABMII but over the next 18 months Healthright Plus is implementing Meta Systems in all 9 Healthright Plus Medical Associates care units. Huron Healthright Plus is the last unit on the list to be implementing the system. Meta Systems is what is referred to as an integrated system. It has four platforms that "talk" to one another. In other words they are shared data bases. The four data bases are Meta Health, the computerised patient record, Carefree for patient accounting, Tempo for appointment scheduling, and Monitor for managed care. The system is also

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designed to be fully integrated with the lab and the pharmacy departments in the Huron care unit. As Terence said when we initiated the MTP Project: "to talk about the redesigning of the model clinical unit and not having the impact of Meta Health as a very central piece of it will be a big mistake."

reasons for looking at Meta Systems

There are 3 reasons why it is important to examine the implementation of Meta Systems in light of the conflicting frames of reference; the physician's and the organization's:

from the very simple to the very complex

reason #1: First and foremost is the need to accrue in-depth knowledge of these conflicting frames of reference and how this dynamic might influence the implementation of Meta Systems.

the implementation stage has failed in the past

reason #2: Terence points out that implementation has failed in the past: "We're using (AMB) II But (ABM) III was like Meta Systems. We stumbled on it so badly that at the end we had to retreat, basically tear it up and throw it away. It happened because of a lot of resistance of line staff who felt like the negative part of what I just reported, "You're going to try to turn me into a secretary? I'm too busy. I'm a doctor."...."The plan spent millions of dollars on the design stage and completely stumbled on the implementation phase."

the financial and human cost of implementation

Financial and human cost issues around implementation of Meta Systems weigh heavily on Terence's mind, in part because of his responsibility as a member on the Healthright Plus Board of Trustees that is bringing in Meta Systems, and in part because of the impact on his practice as as primary care physician: "We're going to have to talk very seriously about implementation that may permit people to opt out of parts of it they're not comfortable with, particularly older physician's who are more ossified and not so flexible perhaps in their work styles or their thinking instead of making an issue that each and every person has to do it this way and leaving some wiggle room for,.it's going to be a big deal." Arias-Vimerland (1996) studied the societal and economic effects of the implementation of computer-based Patients Records in Primary Care. Although Huron is going from one computerised record to another, the Arias-Vimerland study may inform this research. They found that in the first-year implementation of the Clinical Patient Record, the unexpected costs were 8 times higher than the costs spent on training. The unexpected costs included: 1) self training during working hours, 2) loss of normal activities in leisure hours, 3) increase in the administrative work load, 4) extra service and, 5) summarizing medical records. Furthermore they determined that these unexpected implementation costs, attributable both to lack of training in using the Clinical Patient Record and by non-optimal system design, were borne by individual physicians and patients who seem to have been made victims at the aggregate level. As cited in Section 1, Terence does not have time for self-training during work hours, leisure hours to donate to the cause nor can he take on additional administrative duties. In fact he refuses to: "I'm not a time manager and I'm not an office manager".

Following is a short overview of some of the ways in which Terence perceives Meta Systems' impact on his present systems of support. Once we have mapped out this projected territory we will profile the physician's "charting" capabilities with the Electronic Medical Record (EMR) as it stands now and how it will change once Meta Systems is implemented.

Meta Systems means a paper less system

From the very beginning it was obvious that Dr. Meaford required the patient's paper medical record to situate the patient, their problems and the treatment in his mind. "I like to have it all laid out in front of me where my eye can hop from part of the page to part of the page. I like to be able to flip through the printout and compare different things, and I like to be able to do it outside of clinic time, basically as homework." Presently Healthright Plus' plan is to have the computers in the doctor's offices but not in the examining rooms. When Dr. Meaford is with a patient he constantly references the paper printout of the patient's chart and the requisite long or short office visit forms that he has all his patients fill out at every visit. With the introduction of Meta Systems however, Dr. Meaford envisions the following scenario: "Now I am visualising this. The patient is in room #4. We have to go walk in, there will be nothing in the room with the patient, no encounter form, no piece of paper with numbers on it, because they're on an electronic form on the console of my desk."

Alternatively by the time all 9 units have Meta Systems they may very well have monitors in the examing room because Meta Systems was designed to be used in the examining rooms. In that case Dr. Meaford anticipates the following problems, "Well, to me it is very threatening of the style that I have established now for 30 years of interacting with people and not things. I'm wondering how I might do both, that they're talking and I'm typing, I'm not a good typist anyway but I could take a touch typing course and really try to get up my typing speed. But um to concentrate on bringing different things up on the screen, moving a mouse around, clicking things, bringing things on and off the screen while I'm am trying to ask someone to talk to me about their feelings or to explain what the impact of certain symptoms or conditions have been in their lives, or how they're functioning; and then at the same time trying to enter it, to me, it feels like developing also the skills of what they use at the U.N. when they talk about simultaneous translator, someone who can keep up great speed, be thinking in both their native language and another language and be paying attention to both listening and writing and speaking at the same time".

Meta Systems means uncertainty about where things are going to take place

Uncertainty over the specifics of the technical interface leads to general uncertainty about where the physician/patient interface is going to take place. "The idea is let's say that I actually have a computer as of now. Do they put a PC on my desk now in my consultation room where I talk to the patient? And I have exam rooms. Do I have a computer in each exam room? Or is a laptop going to be able to do this? Or does all the entry occur before I take the patient in to the examining room and after I take them back to my room? That's where I say it's of immense architectural implications, including the issue of where is the nurse or the MA in this case going to function and where is my interaction with the patient and a computer going to take place?"

Meta Systems means real time data entry

The requirement of Meta Systems which impinges on current medical practice most acutely is data entry in real time. "No referral piece is written separately from the clinical note because as the clinical note is written, it is the referral note. All kinds of these things. However, it has some intense requirements including all this very prompt data entry which people are accustomed to entering piecemeal, off-line over the next couple of days and must of course change the nature of an encounter. It is drastic." ..."For a start I don't ever write up encounters now during the patient's encounter time. The way this is envisioned, I would have completed the write-up by the time the patients leaves the office because he gets the final output that says that this is your next visit and this is to whom you're referred, and this is a list of your medicines and it' s all right off the printer and it's finished." ..... "If we were to dispense with encounter forms and people who enter the data from encounter forms into the computer, I'm replacing the record-room clerks." ..."But aside from that, I'm not a typist. I'm not sure that the most highly paid people in our entire staff should be in the data entry field."

Meta Systems means having to link the data entry with diagnostic codes

A critical aspect of the data entry in real time is linking everything to diagnostic codes. "And they have you entering a possible code, kind of visualise this: the patient is saying that they have terrible headaches on the side of their head and I'm thinking "has this been an issue before", it could be under "migraines", it could be under "headache", it could be under "tempromandibular joint disease". Where am I going to find out if it has ever been there before? Now, I'm used to a written form where I can click the patients fairly quickly but this has me moving a mouse around, clicking on similar codes, seeing if any of them come up for a report, trying to make my entry under the same code this time that it went under last time, so that the record is not completely chaotic. And while I'm searching for all of that, trying to listen to what the patient is saying about the quality of opinion-associated symptoms she has with it."

Meta Systems means more contact hours

In addition to the challenges of real time data entry, Dr. Meaford anticipates that getting up to speed is going to mean more contact hours expressed either as longer sessions or more sessions than he is currently holding, "But when I finish with the patient then I should go into my desk and while he's dressing do what I now might spend 20 minutes on in organizing and entering data entering in his chart. Presumably that means I'd have to space my patients further apart. But in order not to affect access I would need to have more contact hours. That is, I would increase my clinic hours. I might even so much as double them so that I could take care of my data entry in the day and still have the same patient contact".

Meta Systems means not being able to work from home

Terence is accustomed to working from home when he isn't doing sessions. He describes it as "time which is free, four hours in which I can make cumulated phone calls that I want to make and I have a stack this thick with these phone calls I want to make, consultants I want to speak with, things I want to find out in

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the library to support my practice. That kind of freedom would go." ... "I'd have more hours here and fewer hours at home, and my whole practice life would undergo a major change."

Meta Systems means no more dial-up connection

Another disturbing side effect of Meta Systems for Dr. Meaford is that he will no longer be able to access Medical Records from home via his personal computer and modem: "Then of course what I now do off-line, well what I now do at home will probably mostly have to be done out of the office for two reasons. One is that they are telling me that I cannot be a dial-up customer with my home PC for a couple of years after this goes into effect, because they are not promising to have. I would have to have software in my PC at home that matched this software and they're not promising to have that on either CD ROM or disk, floppy disk ready to insert in my home computer until a year or two of experience to just get the kinks out of it. So, and I'm certainly anticipating that I cannot be a dial-up customer with this at home for quite some time. ....another reason that I can't do it at home is the business about how it has to be ready for in-patient needs. Because all these other connections depend on it. So it seems to me what I would have to do would be a major change in my practice.

Meta Systems changes the work flow and space requirements

In addition to the effect that Meta Systems would have on his own constellation of systems of support, Terence is sensitive as to how it is going to effect the deployment and work flow of the support staff. "First of all the way they show it in the film, they have someone called a nurse who interviews the patient first time on a visit now. I think that would be our medical assistant because they are talking about getting down what the chief complaints are, getting vital data such as height, weight and temperature, entering all those things into the computer in preparation for the doctor's arrival and then this nurse person finishes the encounter by putting together everything. Now the MAs don't have a room at present. Okay, I certainly think this would mean that they need a physical locus, a private physical locus if they're going to do this: a little conference office where the patient would start in that room with him and then be escorted perhaps into an exam room and then finish again in that room with him. Now, how many such rooms with how many practices going on at the same time is a good question."

Meta System decimates existing systems of support

The introduction of this organizational system of support decimates Terence's existing systems of support: the paper medical record, the history and or problem list filled out by the patient, Terence's number of contact hours at the unit, his on-line connections with the current electronic medical record system ABMII, his option of working from home where he isn't constantly being interrupted, his work flow with the support staff and or course the patient-physician interface. At the same time Terence realizes that it is an all or nothing proposition and that it is inevitable: "If you embrace the technology in it's entirety then you have a greater chance of success in that you can make it work for you. This takes time, and cybernetic support."

What we hear Terence saying over and over again is Meta Systems is going to make a major change in the way that he runs his primary care practice. Furthermore the characteristics of the change process that implementation of Meta Systems imposes, are the complete antithesis of the change process that Terence said he was open to at the end of the first section. Meta Systems is being "rolled out" by the central office: this is the organisation's strategy for change. Terence's strategy for change on the other hand is for it to be at his pace, incremental, staggered and built on his existing strengths. I don't think that there can be any doubt that over the issue of Meta Systems, the physician that this case study is based on and the organization of which he is a part have conflicting frames of reference. We will now look at how this dynamic might impact on implementation from the primary care physician's point of view.

11.2 conflicting frames of reference: ABMII vs Meta Systems

Although Terence will be going from one Electronic Medical Record (EMR) called ABMII to another EMR called Meta Systems, his present interface with the EMR will be radically altered. As Terence has just made patently clear, his existing systems of support will be decimated by Meta Systems. In order to get a sense of how profound the change is going to be, we will now look at the differences between ABMII and Meta Systems specifically around the "charting" of the physician patient encounter.

11.3 ABMII

During the course of a session Terence knows there is a patient waiting for him in one of the examining room because an MA has placed the patient's encounter form in the Lucite box marked for encounters mounted on his office door. The encounter form is a legal size paper folder into which a printed off paper record of the patient's chart is inserted. The encounter form is printed on all 4 sides with general categories for capturing information pertinent to most office visits. Prior to placing the encounter form in the door, the MA has ushered the patient down to the examining room and, if necessary, has taken the patient's blood pressure, checked their weight and or their temperature.The MA records this information by hand on the actual encounter form. If the patient needs to be in a johnny-shirt for the visit, the MA will have the patient changed into one. Dr. Meaford then takes the encounter form out of the box on his door and proceeds to the examining room where the patient is sitting on the examining table waiting for him.

Generally speaking, each visit has three phases: gathering information, the physical examination, and discussion regarding patient education, prescriptions, and or referrals. As Dr. Meaford proceeds with the office visit he generally leaves the encounter form on the counter beside the sink and takes the paper chart with him and stands at the foot of the examining table, directly in front of and very close to the patient. Dr. Meaford flips back and forth through the paper chart referencing past data while he asks the patient questions. From time to time he makes notes on the paper chart. The notes can be made while standing in front of the patient or from time to time he will go back to the sink counter top for a hard surface

to write on. He might also makes brief entries or check off items on the encounter form. If the patient is in a wheelchair he will sit down on his stool so that he is at their height and proceed to make notes on the paper chart on his knee.

This pattern of information gathering precedes any physical examination. In addition to bringing Dr. Meaford up to speed, this initial phase of the encounter allows the physician and patient to reconnect. Throughout the information gathering phase Terence will frequently touch the patient to reassure them and he establishes sustained eye contact when eliciting information. When Terence has ascertained the information he is looking for, the visit progresses to the physical examination or treatment. At this point Dr. Meaford puts all the papers down on the counter beside the sink and goes over to the patient sitting on the examining table. Dr. Meaford then continues with the second phase of the visit. During the course of the physical examination or treatment or right after its conclusion, additional notes are made on the patient's paper chart or entered on the encounter form over at the counter.

The third phase of the visit involves discussion between the patient and Terence and may include a review of patient education material, the writing of prescriptions, and/or referrals. The educational material that Dr. Meaford needs maybe in the room, or he may have to return to his office or go to the front desk to retrieve the material he is looking for. The referral forms are on shelves above the sink and the prescription pad is usually in his pocket. Dr Meaford fills out the requisite forms while standing at the counter. He is often explaining things to the patient while he is filling out the forms. He also makes a point of stopping and asking the patient if there is anything else that they would like to discuss before the visit is concluded.

At the end of the visit Dr. Meaford then gives the forms or prescriptions to the patient, puts a blueprint copy of same in the encounter form for the patients record, and returns to his office. The patient is left to get dressed and go out to the Down MA's desk where she will book the referral for the patient. Dr. Meaford doesn't always fill out the entire referral form. It may be that the MA can fill in some of the blanks while she is on the phone booking the referral appointment for the patient. The patient then takes the completed referral forms with then to the appropriate department, for example the lab for blood work, or their prescription down to pharmacy where they hand it over to the pharmacy staff to be filled.

When Terence gets back to the office, the encounter form with the paper chart and the copies of the prescriptions and referrals enclosed joins the ever mounting pile of encounter forms on the floor. From what I have observed in the department, it is highly unusual for the encounter forms to be filled out directly after the patient's visit. In Terence's case they are almost never filled directly after seeing the patient. He is usually running so far behind schedule that he moves on to the next patient as soon as possible.

At the end of a session Dr. Meaford will put the encounter forms from the entire session into his briefcase and take them home where he completes them after dinner. In the course of completing the encounter form Terence will reference the notes that he has made on the patient's paper chart during the office visit. But he may also decide that he needs to reference information that hasn't made it into the patient chart yet or information that can't be entered into the digital record such as x-rays. He may have to phone the lab for tests in progress or, in the case of the x-rays, drop down to medical records on his way into work the following morning to look at them in person. The x-rays could also be delivered to his office by request but this usually takes a day. Dr. Meaford might also want to look up source material pertaining to the patient's case on the web or he might want to reference the patient's digital chart for information that is not present on the paper chart. Presently he can access the digital chart and surf the web from home. In the mean time the encounter form stays with Dr. Meaford until he has all the information that he needs to complete the chart entry.

An important point to underscore once more is the fact that Dr. Meaford's patient are sick and elderly. A significant amount of the information that he is garnering makes sense only within the context of the information gathered in preceding visits. Additionally, not all of the lab results for a patient are returned to the doctor at the same time, so these results have to be collated before an overall picture becomes manifest. In other words for patients with very complex health problems it is not unusual to take a couple of days to pull together all the information needed to make a thorough entry on the patient's encounter form.

When the encounter form is complete Terence delivers the paper chart to the shredder bin and the encounter form is placed in a stacking box in the utility room where one of the staff members picks them up and delivers them to medical records where the data entry is in turn contracted out to transcribers. If the encounter form has a stat sticker on it then the encounter is processed right away. Otherwise turn-around time can be several days. If the patient has to make an unexpected return visit to see Terence, then the information might not have been entered into the patient's permanent digital record. When the data entry is complete, the information from the last office visit is available to be printed out at the next office visit.

Dictation over the phone is presently an alternative means of summarizing the patients visit. The encounter form is still filled and sent down to medical records to be entered, the only difference now being that the physician's summary of the visit is on tape.

We will now compare the ABMII physician charting interface system of support with the charting interface that Meta Systems affords.

11.4 Meta Systems

Presently there is a computer in Terence's office which he uses to look up patient's charts and to book patient's appointments. The care unit is undecided as to whether there will be additional computers in the examining rooms or only in the physician's offices and at the MA's desks. Or alternatively they may put monitors in the examining rooms that have an intra-net hookup. For the purpose of this comparison we will cover both possibilities; a computer in Terence's office and in the examining room. The information for this section was obtained by attending the Meta Systems orientation, reading the Meta Systems literature and from talking with the physician and the unit administrator.

The computer will signal Terence via a dialogue box when there is a patient waiting for him in the examining room. As with ABMII, the MA will have taken the patient's blood pressure, weight and temperature. If there is a computer in the examining room, then the MA can log on and access the patient's chart and enter that information directly into the patient's electronic chart. If there isn't a computer in the examining room then the MA will have to make a mental note, or take a piece of paper with the information back to her desk and enter it into the patient's digital record there. Once her preliminary information has been entered then the computer signals Terence that the patient is ready.

If computers are placed in the examining rooms, maintenance assures me that they will be located on the only available counter top in the room which is adjacent to the sink (right where the pap supplies are made ready for the physician and where Terence currently writes his notes.). Regardless, Terence will come in, log on and access the patient's digital chart which the MA had exited when she left the room to protect patient privacy.

As with the current system, Terence will progress through the three phases of the physician/patient encounter. During the first phase he will garner information from the patient. Because he has to stay at the counter to enter the data, he can not go over to the end of the bed and reassure the patient with his touch or presence. Nor will he be able to maintain the same calibre of eye contact because the computer monitors fit on the counter in such a way that he will be facing the wall, not the patient. With the paper chart, the notes that Terence made could be quick, informal and highly idiosyncratic because he was later going to transcribed and augment them for the encounter form. The entries made in Meta Systems have to be intelligible from the word go. This will take more time and concentration on Terence's part.

During the second phase, the physical examination or treatment, Terence leaves the counter and goes over to the patient on the examining table. And as with the existing system, information is entered during or at the end of the second phase. If the patient has someone with them and they are sitting in the only available chair in the room while Terence is doing the examination, they will have an unobstructed view of the monitor. A second privacy issue is the fact that if an entry isn't made within so many minutes the computer is programmed to close down.

During the third phase Terence now has to enter his physician's summary because the prescriptions and referrals and, even more importantly, the billings are generated from it. Under the old system there wasn't any rush to look through the paper chart and match up diagnostic codes. Under the new system the need to matching up diagnostic codes is both essential and immediate. Because of Terence's longstanding use of the paper chart, he has an informal knowledge of where to find the information that he is looking for. "The patient had that operation in 1989 so I'll find it down about an inch and a half." That tacit, informal interface is entirely missing with the virtual chart where you have to access information through menus and windows. Once the diagnostic codes have been matched up or abandoned, and the physician's summary has been entered, the referrals and prescriptions go directly to the department designates, the visit is completed and the patient leaves the office empty handed unless of course they have been given educational material.

As we can see with Meta Systems, the physician charting interface is radically altered. Terence must do all the charting in real time because the billing, tests and referrals are all generated as a result of that completed digital encounter form. In effect the patient can't check out of the department until the encounter form is complete. Another facet of the interface to be changed is dictation. Dictation of the physician's summary which was possible under ABMII is no longer an option under Meta Systems. For security reasons all dictation will have to be taken care of in-house and, for that reason, administration says physician dictation will be highly discouraged. Another security- driven change to impact on Terence is the fact that he will not be able to access the patient's records from home.

We will now very briefly touch on three issues distilled from the preceding comparison that demonstrate why the conflict of the frames of reference is so profound in its potential to impact on the delivery of health care.

11.5 Discussion

window of reflection

Although ABMII has its drawbacks there are advantages both for Terence and the patient, the most critical factor being that ABMII allows for a window of reflection on Terence's part. Again it must be emphasised that Terence's patients are not coming in for just their annual paps and or physical exams. Their diseases and resulting treatment profiles are incredibly complex. The new system demands that Terence gestate on the spot. The additional steps that he currently goes through to inform his prescribed course of action will, with the advent of Meta Systems, be seriously curtailed or missing all together. One has to ask, is the incoming physician charting interface in the best interests of the health management of the patient?

physicians need to manipulate the data

Studies have shown that physicians need to manipulate patient data in order to help situate the information in the appraising and diagnostic process. The old system ABMII facilitated that opportunity to manipulate the data by providing the paper chart. Terence situates the data by making notes on the paper chart at the time and then revisits the information when he makes the final entry on the encounter form. These steps are absent in the new system which requires that the data be entered but not manipulated. Furthermore the new system does not afford Terence the opportunity to augment the patient information gathered during the actual encounter the way he does now. When Meta Systems is rolled out it will not be able to access radiographic images etcetera although this is a capacity Meta hopes to develop over time. Additionally, if the new system does not allow Terence to embrace the depth of chart documentation that he feels constitutes good medicine, does that mean he will have to back-up Meta Systems with a system of files either in the office or at home? Unfortunately neither system captures the amount of time outside of the actual encounter that Terence spends manipulating that data in the interests of managing the patient's care.

human safety net

And finally there is the whole issue of the human safety net present with human interactions but absent with Meta Systems. With the advent of Meta Systems, the referrals and prescriptions would no longer go through the MAs, but instead go, for example, directly from the physician's computer to the pharmacy computer. This means that in order for the transaction to be seamless there can't be any mistakes or incomplete items in the referral or prescription forms. Presently the MAs look over these forms with the patient while they are booking the referrals etcetera. This gives the MA the opportunity to double check the entries on the forms and to answer the patient's questions and get the patients feedback on what appointment times and arrangements would work best for them. The quality of this interaction is not going to happen with Meta Systems. In the single care unit where Meta Systems has been "rolled out" they discovered that under the old systems the MAs and Lab technicians understood the individual physician's idiosyncrasies and would modify the entry on the form or their response to it accordingly. By contrast, the new system just rejects the physician's orders that don't conform to the program's protocols, and the prescription or lab test requisition lands back on the desktop of the physician.

There is a certain irony in the fact that a PMO is now "rolling out" a system of support which in effect ends an era in health care. Meta Systems signals the end to physician autonomy defined as deciding where you work, when you work and the means by which you are evaluated (Perin, 1988), and the predominance of organizational values down to the very essence of primary care practice, the patient-physician interface. The question now confronting the primary care physicians is: can they make manifest their values in the policies directing this organization? Although Terence as a member of the board of trustees is contributing at the administrative organizational level, policy input is a prerogative that clearly needs to be exercised at the individual and departmental level as well.

11.6 final summary

This thesis started with an overview of the systems of support in Dr. Meaford's practice. In doing so identifiable default practice patterns emerged. In the process of fleshing out a context for those patterns it became apparent that organizational policy can either stress or support medical practice. In Terence Meaford's case it was very much the former. What constituted a practice-specific, workflow-based system of support for him did not constitute a support priority for the organization. This is essentially why his implementations failed.

In the process of coming to this realisation, it seemed obvious to ask how much more successful a system implementation might be if it were coming from "the top down". To that end we looked at what might transpire when the PMO attempts to implement its system of support, the integrated electronic medical record system. It soon became obvious that there was a profound conflict of frames of reference: ABMII supports primary care practice: Meta Systems supports managed care business. The only place where the two frames of reference intersect is efficiency. If Terence can improve the efficiency of his practice he won't be so overwhelmed: If the organization can improve his efficiency then he will be able to increase his panel size and generate more revenue.

The implementation of these electronic medical record systems signals the end of an era in healthcare: Meta Systems confirms the supremacy of organizational values right down to the essence of medical practice itself the physician-patient encounter. Jane Jacobs, in her 1992 book, "Systems of Survival A Dialogue on the Moral Foundations of Commerce and Politics", lays out 2 value systems: the guardian syndrome (Dr. Terence Meaford) and the commercial syndrome (Healthright Plus the PMO). Her point is that the espoused self interests of these two groups will always be in conflict because their value systems are antithetical. In her analysis however, there is no mention of the role that technology plays in wrestling these two to the mat. I propose that technology could be the "zipper" that pulls these two sides together and input at every level to the policy governing this technology is absolutely essential if quality of care is to remain a priority for the practice of medicine.

When frames of reference conflict, nowhere will this be more evident than at the critical points of policy and systems implementations. As a means of pursuing the further study and understanding of this process, I shall conclude with an annotated list of implementation readiness design criteria that have been distilled from the present research.

SECTION 4
12 IMPLEMENTATION READINESS DESIGN CRITERIA

Following is a check list of implementation readiness design criteria which is but a starting point for further research on implementation of information technologies. This design criteria might also contribute to human interface design, and the development of dynamic, interactive tools for: 1) assessing implementation readiness, 2) improving implementation readiness, and 3) the process of implementation itself.

12.1 check list

As maintained from the very beginning, the ability to toggle back and forth between the practitioner and the organisation is critical to understanding the issues around and dynamics of implementation. The following check list is compiled to assist in ascertaining the big picture, the context for the implementation. It then features an SOS "check-up", as a tool for both breaking down complex work environments into digestible chunks, and knowing where "readiness" is required. This enumeration is followed by the list of default practice patterns, behaviours that belie either botched implementation or just down right "unreadiness". When you step back and see that these patterns are beginning to lose their edge you know you're heading in the right direction. And finally a very preliminary account pertaining to the fine art of implementation itself.

12.2 ascertaining the big picture

At this level you want to establish the big picture: where practice stands in relation to policy. You also want to determine if there are conflicting frames of reference and finally if there is any common ground.
1) What is the policy that is going to be implemented?
2) How closely aligned are policy and current practice?
3) How do current frames of reference compare: the organization's and the clinician's?
4) Do the frames of reference intersect? For example over the issue of efficiency?
5) Do the parties anticipate that implementation will increase or decrease the gap between those frames of reference?
6) Where do the organization and practioners want to be after implementation?

12.3 status of the systems of support

Each participant will have their own constellation of SOS which will have to be mapped out, just as we did for Terence, but having done so the next step is to establishing the "health" of these support systems.
1) Are there fully operational synchronous and asynchronous communication systems in place?

2) Are job descriptions and tasks linked to specific individuals?

3) Is the right person in the job

4) Are the SOS integrated?

5) Is team work evident in each system of support?

6) Do parties within the system of support share the same concept of team?

7) Do persons have the technical and architectural support they need for optimal efficiency and productivity?

8) Is there continuity amongst the work force?

9) Are there the right number of staff?

10) Is supervision in place?

11) Does the system of support have too many clients?

12) Are the people that staff have to answer to different from the ones they serve? (eg: The support staff serve the clinicians but they answer to administration.)

12.4 default practice patterns: indicators of "unreadiness"

These are the patterns that begin to emerge when the SOS are not in place or they are dysfunctional. An assessment at this level will give you quick sense of the work ahead.

1) Persons saying they are overwhelmed

2) Persons compensating for short comings in the environment: head down and working even harder?

3) Persons practising in isolation: lack of team effort

4) High levels of interruptions: marked traffic of synchronous over asynchronous communication

5) Lack of efficiency protocols in place: for example RTA protocols absent

6) Refusal to take on additional responsibilities initiated by changes in policy: management, administrative

7) Bottlenecks are present: phone lines, clinician, etcetera

8) Triage function missing: phone lines, messages, patients, etcetera

9) Solutions are local and idiosyncratic

10) Communication is lacking, inadequate, "locally selfish"

11) Dominance of personal criteria for change

12) Weak or nonexistent sub cultures

13) Pattern of putting out fires instead of making changes (scrambling)

14) Lack of leadership

15) Lack of infrastructure: no manuals, reference base

16) Absent or inadequate supervision

17) Lack of innovative uses of technologies

18) The pay is not commensurate with the job

12.5 At the point of implementation

This is the level at which the fine art of implementation occurs: the point at which you want to negotiate those systems of support into place so they overlap and then suture them together. In essence you want the SOS of the various parties to map onto one another and they will only do so if you have customised the fit for each of them. Your negotiating chip for doing so is relief from the default practice patterns:

1) Identify espoused self interest.
2) Develop the technology and the practice in tandem.
3) Identify ways in which policy is supporting practice.
4) Identify ways in which policy stressing practice and reframe.
5) Identify the right level of entry for implementation.
6) Identify the right interface: Aristotelian or fuzzy?
7) Identify where implementation can increase participant's autonomy.
8) Identify where implementation can make the job easier and more satisfying.
9) Identify and build on existing strengths.

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