# A Case Study: The Initiative to Improve RN Scheduling at Hamilton Health Sciences

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**Abstract**

In 2003, Hamilton Health Sciences embarked on an initiative to improve and standardize nursing schedules and scheduling practices. The scheduling project was one of several initiatives undertaken by a corporate-wide Nursing Resource Group established to enhance the work environment and patient care and to ensure appropriate utilization of nursing resources across the organization's five hospitals.

This article focuses on major activities undertaken in the scheduling initiative. The step-by-step approach described, plus examples of the scheduling resources developed and samples of extended-tour schedules, will all provide insight, potential strategies and practical help for nursing administrators, human resources (HR) personnel and others interested in improving nurse scheduling.

## Background

In 2003, Hamilton Health Sciences (HHS) began an extensive review of scheduling practices in response to escalating nursing shortages and quality of work-life concerns. In addition, preliminary analysis of high benefit, worked-hour and agency costs compared to those of peer organizations suggested potential efficiency opportunities existed and revealed a number of possible contributors to these high costs, including nursing schedules and scheduling practices.

Given the complexity and scope of the review required, and the development and implementation of recommended improvements envisioned, it was recognized that extensive efforts were required. Accordingly, an external consultant with expertise in scheduling was retained and partnered with the nursing resource group (NRG) manager functioning as the internal project lead for the NRG initiatives.

As HHS has a registered nurse (RN) workforce of over 2,500, the objective of achieving best practice scheduling was identified as a corporate priority. Over the course of three years, several series of scheduling resources and tools were developed, and ongoing education and support were provided to ensure clinical managers were able to create and manage nursing schedules effectively. In 2006, the scheduling initiative culminated in the development of quantifiable scheduling metrics to facilitate ongoing monitoring and maintenance of best scheduling practices.

## Project Milestones

Initial project planning included the establishment of a corporate working group – the Best Practice Scheduling Task Force. Reporting to the NRG, a broad representative group was selected to participate on the task force, including directors, managers, union representatives and business clerks, along with human resources, finance and decision-support staff. To clearly understand the reality of scheduling on the front line, the task force developed a Unit Scheduling Review and Analysis Questionnaire. It was completed by all inpatient clinical managers, in collaboration with business clerks on units where clerks had assumed a significant role in scheduling.

The scheduling questionnaire included over 100 questions and was developed to capture details of unit schedules and unit-specific scheduling processes. The goals were to identify examples of "best practice scheduling" that could be shared across the organization, as well as opportunities for improvement. Best practice scheduling was defined by the task force as "schedules and scheduling practices that were cost-effective, provided the budgeted staffing coverage, followed the scheduling provisions of the Collective Agreement and were fair and equitable to all staff."

Analysis of the responses revealed that some units had developed unit-specific scheduling guidelines that clarified such potentially contentious issues as granting vacations and the processes of declaring availability and awarding overtime, and had schedules that were considered balanced and fair – all positive examples of best practice.

However, there were many areas that required improvement, such as schedules that did not provide budgeted staffing levels or that resulted in inadequate coverage on hard-to-fill tours, including nights and weekends, due to injudicious grant-

ing of the "drop" and "pick-up" tours required to balance extended-tour schedules. (See Extended-Tour Schedules in Appendix 1 for explanation of drop and pick-up tours.) In addition, managers' scheduling expertise and experience varied considerably, and inconsistencies in practice were identified that had resulted in some perceived inequities between units.

Concomitant with the Unit Scheduling Review and Analysis Questionnaire, the Best Practice Scheduling Task Force developed an RN Scheduling Staff Satisfaction Survey. RNs were asked to rate the state of scheduling according to such criteria as quality, coverage provided and fairness. With a response rate of 40%, the survey provided significant insight on the elements of scheduling most important to nurses. Of note, some of the most valuable and informative feedback was found in the narrative comments, where nurses identified the impact scheduling had on quality of work life and clearly stated their issues and concerns regarding current practices. Other highlights included the finding that 60% of full-time (FT) staff members were very satisfied with the quality of their master schedules (see Appendix 1). The regular part-time (RPT) and casual RNs were much less satisfied with the quality of their schedules, in part because they were not on master schedules, and there was a lack of predictability regarding their hours. The criterion rated the lowest by all was the perception of fairness, a result that substantiated findings of the unit questionnaires. The criterion most important to all categories of staff was the staffing coverage provided by the schedules.

A document was then developed entitled Lessons Learned, and meetings were held with each clinical program to discuss the document and the impact of specific schedules and scheduling practices on unit staffing budgets, staffing coverage and staff morale.

Utilizing all the information obtained from unit questionnaires, RN surveys, Lessons Learned and discussions at the task force and clinical program meetings, scheduling guidelines for RNs at HHS were developed. The guidelines are maintained by a Corporate Scheduling Committee and are an online resource easily accessible to management and HR staff. The major goal of the guidelines is to ensure consistent scheduling practices on all nursing units.

The guidelines acknowledge the challenge for clinical managers to balance the needs of units and patients for quality, cost-effective care against the needs of staff for quality of work and home life. The guidelines are a comprehensive reference that interprets the ambiguous areas of the Collective Agreement; they are a resource, and provide a rationale, for difficult scheduling decisions clinical managers must make without appearing unreasonable and arbitrary to their staff.

Table 1 illustrates one particular section of the scheduling guidelines on the management of overtime, this one in relation to seniority. There are other guidelines in this section detailing strategies to minimize weekend premium payments. Overall, there are seven major sections, addressing such issues as balancing the schedules, managing leaves of absence and vacations, and scheduling part-time staff. In total, there are currently 23 pages on-line in the Scheduling Guidelines document.

**Table 1.** Example of a scheduling guideline

**Management of Overtime**
Relevant Contract Language: ONA Local Agreement
Article C-2 Management Rights
a) "The right to maintain order, discipline and efficiency, and in connection therewith, to make, alter and enforce from time to time, reasonable rules and regulations…"

Article H-8
a) "…and on such posted work schedule RPT nurses on the unit have been given opportunity to work all available tours that would not result in any overtime premium payment.
b) "It is understood that the hospital will not be required to offer tours which would result in overtime pay."

**Recommendation:**
There is no Collective Agreement language to support calling in full-time staff or part-time staff in order of seniority for available overtime shifts. Examples of criteria for calling and offering overtime should include:
- Those who will be called are the nurses who have made their availability known in writing, so that time is not spent calling nurses who are unavailable;
- Staff who will not incur consecutive weekend OT will be called before those who will, on the principle of least expense.

Note that while it is important to operate on the principle of "least expense," i.e., not incurring consecutive w/e OT, the most senior staff should not be discriminated against in terms of offering OT. The principles of equitable opportunity and fairness are most important.

**Rationale:**
It is time-consuming and may be time wasted and [it is] also more expensive to call all staff in order of seniority. In addition, it limits opportunity for all staff to earn overtime equitably.

It is the responsibility of management to avoid or limit OT, as long as the provisions of the Collective Agreement are not violated.

A one-day scheduling workshop was developed as follow-up to the scheduling guidelines and was a key component of the scheduling initiative. Mandatory for all clinical managers, the workshop provided an opportunity to go back to the basics of scheduling. It was promoted as an introduction to the Joy of Scheduling, the latter admittedly a hard sell! Clinical managers developed a staffing budget for a sample unit, based on an approved daily staffing pattern, and utilized a staff-

ing algorithm that identified the number of full-time, part-time and casual RNs required to achieve the 70/30% ratio of FT to PT paid hours. Master schedules were created that provided the approved staffing coverage, utilizing a combination of scheduling models. With the insights gained from this scheduling exercise, managers could move on to reviewing and revising their own unit schedules, where necessary.

Operational scheduling issues were also discussed, including the imperative that schedules be managed electronically. In the absence of a hospital-wide computerized scheduling system, managers were shown how to use Microsoft Excel optimally to provide assistance with scheduling, such as tracking staffing numbers scheduled per tour and managing vacations.

The workshop included a detailed review of the scheduling guidelines. Throughout the discussions, it was emphasized that scheduling was not only a management right, but also a core responsibility, and that clinical managers have ultimate accountability for effective schedules and scheduling practices.

Scheduling resource manuals were provided as a written reference for the content taught in the workshop and included samples of different schedules and reference information.

The major goal of the guidelines is to ensure consistent scheduling practices on all nursing units. The scheduling initiative supported this strategy, and units with the highest agency utilization rates were visited prior to this date to help revise unit schedules where shortfalls were contributing to agency utilization.

One of the major objectives of the scheduling initiative was to measure the desired outcomes and ensure sustainability. Accordingly, a Metrics Committee was established to develop scheduling metrics, defined as "a series of indicators that may be used to assist in the measurement and management of nursing unit schedules and to provide a mechanism for evaluating, monitoring and trending scheduling practices" – in essence, measurable indicators of whether the scheduling guidelines were being followed.

Table 2 provides an example of one scheduling metric measuring overtime, chosen because it relates to the Management of Overtime Scheduling Guideline illustrated in Table 1.

In addition, a standing Corporate Scheduling Committee, chaired jointly by a clinical manager and an HR labour relations associate, was established to ensure

the scheduling guidelines were kept current and to provide advice to clinical managers on complex unit-specific scheduling conundrums that arose and had not been addressed in the guidelines.

## Table 2. Example of a scheduling metric

**Measurement Indicator: How Is Overtime Awarded?**
Related Scheduling Guideline Being Monitored – "Management of Overtime" (see Table 1)
**Explanation of column headings:**

- % of OT Paid to Staff at Step 9 (Column 2) – the percentage of the total amount of OT incurred by the unit being paid to the nurses with greatest seniority, that is, who are at the top of the pay scale – Step 9
- % Staff Distribution at Step 9 (Column 3) – the percentage of the total number of staff nurses on the unit who are at the most senior level – Step 9 of the pay scale

Example:

| UNIT<br>#1 | % of OT Paid to Staff at Step 9<br># 2 | % Staff Distribution at Step 9<br># 3 |
|---|---|---|
| A | 93% | 89% |
| B* | 67% | 31% |
| C* | 76% | 53% |
| D | 35% | 31% |

**What do these indicators potentially imply?** On Units B* and C*, note incongruence between the % of total OT being paid to those at the top of the scale versus the distribution of staff at Step 9. With Units A and D, there are discrepancies of only 4 percentage points between columns 2 and 3, whereas with units B and C, these discrepancies are 36 percentage points and 23 percentage points respectively, indicating a disproportionate amount of OT pay being earned by senior staff. Units B and C may be granting OT by seniority, as opposed to offering it equitably to all staff, as per the scheduling guidelines. May flag any potential to review offering of OT process. Need to also consider possibility that only more senior staff express interest in OT; therefore, may appear as if awarding OT preferentially to senior staff.

In July 2005, a survey of clinical managers was conducted to determine the extent to which the recommendations of the scheduling initiative had been implemented.

Survey results and metrics showed that while many of the recommendations had been put into effect, there were still units with opportunities to more fully implement the scheduling guidelines.

Accordingly, scheduling fundamentals workshops were repeated for new clinical managers and for those who wanted a review. These workshops included discussion on the challenges of applying the scheduling guidelines. Following the workshops, educational sessions on the scheduling metrics were held for all clinical program directors, clinical managers, HR associates and program financial controllers.

### Measurable Outcomes

RN agency use has been eliminated, absenteeism and overtime rates have been reduced and continue to trend favourably, and the 70/30% full- to part-time nursing ratio has been exceeded. Table 3 provides the specific numbers achieved over a four-year period.

**Table 3.** Productivity indicators

| Indicators | 2003/2004 | 2004/2005 | 2005/2006 | 2006/2007 |
|---|---|---|---|---|
| RN absenteeism rate | 6.43% | 5.3% | 4.6% | 4.5% |
| Overtime rate | 2.52% | 1.7% | 1.8% | 2.0% |
| Agency rate | 2.2% | 0.64% | 0% | 0% |
| % FT/PT | 70:30 | 72:28 | 74:26 | 75:25 |

While other nursing resource management initiatives have contributed to these improved outcomes, the scheduling initiative has undoubtedly been a key factor in the achievement of these targets.

Feedback from clinical managers has been positive, with the scheduling workshops being rated as very helpful, and with requests for more scheduling guidelines and an online forum for discussion of scheduling issues.

HHS has shared their work and learning on scheduling with numerous organizations, all of which are experiencing similar scheduling challenges, thus providing evidence of the need to continue to share and communicate innovative and creative scheduling practices with peers.

### Conclusions

Scheduling of nurses is a major operational challenge, and as such needs to be recognized as a core competency for clinical managers. Scheduling is overlaid with continued financial and human resource constraints, and there is an ever-increasing need to ensure that efficient and effective scheduling practices are established, maintained and monitored. The inherently complex and contentious nature of scheduling often deters practice changes, and frequently opportunities to maximize efficiencies are lost.

Best practice scheduling cannot be maintained consistently across an organization without ongoing monitoring of scheduling indicators, written scheduling guidelines that supplement and interpret the Collective Agreement, and continuing education on scheduling for clinical managers. In addition, program directors, HR and finance personnel should receive some degree of education on schedul-

ing. These stakeholders can then more fully understand scheduling complexities, appreciate the time required to create and manage unit schedules, and provide the necessary resources to clinical managers to ensure those individuals have appropriate support for their significant scheduling responsibilities.

Appendix 1 shows specific master schedules in use at HHS. Note that the schedules are depicted vertically in one-week blocks, with all nurses in the block working exactly the same hours, consecutively.

To be balanced the 3/2 schedules need to be in blocks of four nurses, although if more staff are needed on days, two lines of days can be added, to provide two on days and one on nights. Blocks can be extended, but must be in even numbers to balance, and to avoid having to provide an extra weekend off.

With the 4/5 schedule, there must be nine nurses in the block to provide balanced coverage.

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## Appendix 1
## Summary Page of Most Common Extended-Tour Schedules at HHS

| Appendix to Scheduling Guidelines | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Extended Tour (12 hour) “3’s & 2’s” | | | | | | | | | | | | | | | |
| Fourteen 11.25-hour tours scheduled every 4 weeks result in excess of 7.5 hours or 2047.5 hours per year. (97.5 extra hours). Most expedient way to balance the schedule is to schedule one “drop day” every 13 weeks for a total of 45 hours. Remaining 45 hours can be assigned to the twelve 7.5-hour stat holidays (12x3.75=45 hours) leaving 1957.5 hours per year. If drop day is scheduled in conjunction with stat lieu day, nurse will have one week off. Note that every group of 4 nurses results in coverage of 1 on 12-hr day and 1 on 12-hr night. | | | | | | | | | | | | | | | |
| | 3’s & 2’s- PATTERN 1 | | | | | | | | 3’s & 2’s- PATTERN 2 | | | | | | |
| | Thu | Fri | Sat | Sun | Mon | Tue | Wed | | Thu | Fri | Sat | Sun | Mon | Tue | Wed |
| | | N | N | N | | | N | | | N | N | N | | | N |
| | N | | | | | D | D | | N | | | | D | D | |
| | | | D | D | D | | | | | D | D | D | | | D |
| | D | D | | | N | N | | | D | | | | N | N | |
| Total | | | | | | | | Total | | | | | | | |
| D | 1 | 1 | 1 | 1 | 1 | 1 | 1 | D | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| N | 1 | 1 | 1 | 1 | 1 | 1 | 1 | N | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Positive feature is 4-day weekend. Negative is uneven pays, some being only 6 tours, others 8. Sometimes referred to as “late week” schedule as work days Tues/Wed or Thurs/Fri. Another positive feature is that 4-day w/e means less adjustment for stats when they fall on that 4-day w/e. | | | | | | | | Positive feature is even pays, each 2 weeks providing 7 extended tours. Sometimes referred to as “early week” schedule as work days Mon/ Tues or Wed/Thurs. | | | | | | | |
| Extended Tour (12 hour) “4 on, 5 off” | | | | | | | | | | | | | | | |
| Twenty-eight 11.25 hour tours scheduled every 9 weeks result in shortfall of 22.5 hours or 128 hours per year. One method of balancing is to assign 3-4 “pick-up“ tours per year (45 hours). 12 stat lieu days (90 hours) are assigned to scheduled days off (90+45=135 hours) | | | | | | | | | | | | | | | |
| | 4 on & 5 off | | | | | | | | | | | | | | |
| | Thu | Fri | Sat | Sun | Mon | Tue | Wed | | | | | | | | |
| | | | | | | D | D | Positive features are long stretches of days off. Switches from days to nights follows circadian rhythms of body. Provides 3 complete weekkends off in 9 and 3 partial. Over the year, provides fewer complete weekends (17.1 vs 26) but more weekend tours off than with 3’s & 2’s. More suitable for units needing even coverage, as difficult to convert night tours to days, but can be done. | | | | | | | |
| | N | N | | | | | | | | | | | | | |
| | D | D | N | N | | | | | | | | | | | |
| | | | D | D | N | N | | | | | | | | | |
| | | | | | D | D | N | | | | | | | | |
| | N | | | | | | D | | | | | | | | |
| | D | N | N | | | | | | | | | | | | |
| | | D | D | N | N | | | | | | | | | | |
| | | | | D | D | N | N | | | | | | | | |
| Totals | | | | | | | | | | | | | | | |
| D | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | |
| N | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | |