Essential Elements of Nursing Documentation: A Rapid Review

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Working for you

Table of Contents

Key Messages

1. Peel Public Health nurses document using a variety of paper and electronic methods and frameworks according to varying policies, procedures, and guidelines.

2. High quality evidence suggests that clinical pathways and structured forms of documentation can have positive effects on patient outcomes. Computerized records may not.

3. Clinical pathways, computerized record systems and structured documentation can have positive effects on nursing outcomes, including documentation, time, and practice. Computerized record systems have mixed effects.

4. High quality evidence demonstrates that clinical pathways and structured documentation can have positive impacts on organizational outcomes.

5. Qualitative evidence provides essential elements of high quality nursing documentation that can be incorporated into policies, procedures, and guidelines.

Executive Summary

Research Question

The purpose of this review is to identify the essential elements of nursing documentation that mitigate risk as defined by better outcomes for clients, nurses, and the organization.

Issue and Context

Public health nurses must document actions at the individual, community, or population level concisely and accurately in multiple databases and systems. They must adhere to professional standards and organizational polices while supporting their health unit in meeting legislative requirements. Nurses document using a variety of methods and frameworks according to varying policies, procedures, and guidelines. The lack of consistency and clarity regarding efficient, effective methods for nursing documentation at Peel Public Health has the potential to increase risk to clients, nurses, and the organization.

In Ontario, the Chief Nursing Officer for each public health unit is responsible for quality assurance and continuous quality improvement. Internal PPH differences in audit processes, use of electronic systems, and forms of documenting supported the need for this review of the literature to address both risk mitigation and quality assurance concerns.

Methods

A systematic search was used to identify 19 articles relevant to the research question. Five papers were independently appraised for quality by two reviewers. The three articles included in this review are two effectiveness systematic reviews and one qualitative meta-study.

Key Findings

Two systematic reviews explored three types of documentation interventions: clinical pathways (CPW), computerized record systems, and structured forms of documentation, e.g., flow sheets, care plans. CPWs and structured forms of documentation demonstrated positive effects on patient outcomes. CPWs, computerized record systems and structured documentation had varied effects on nursing outcomes, including documentation, time, and practice. CPWs improved documentation quality and quantity. Computers had mixed effects on documentation and nursing practice time, while structured documentation resulted in positive practice outcomes. CPWs and structured documentation reduced hospital length of stay and computerized record systems significantly increased the number of activities and interventions nurses documented.

The meta-study provided seven essential elements of quality nursing documentation. Quality is defined as documentation that is accurate, concise, and relevant to patient care.

Recommendations

1. Create policies, procedures, and guidelines for nursing documentation that include the essential elements of quality nursing documentation as outlined by Jefferies et al.[6]

2. Investigate feasibility of implementing clinical pathways for programs that provide individual client care, e.g., Communicable Disease Investigations, Healthy Sexuality, Breastfeeding, and Healthy Babies, Healthy Children.

3. Implement clinical pathways or structured documentation (e.g., flow sheets, care plans) across all areas of public health nursing prior to the introduction of an electronic medical record and Panorama to facilitate the transition to these systems.

4. Continue research into and implementation of an electronic medical record system to improve quantity and quality of nursing documentation.

5. Develop indicators and collect baseline data regarding current documentation practices for outcomes at the client, nurse, and organization levels.

6. Monitor and evaluate outcomes following the introduction of the documentation system, and publish as appropriate.

1 Issue

Public health nurses must document actions at the individual, community, or population level concisely and accurately in multiple databases and systems. They must adhere to professional standards[1] and organizational polices while supporting their health unit in meeting legislative requirements.[i]

Nursing documentation is the focus of the Chief Nursing Officer's quality improvement initiative. A current state assessment of nursing documentation within Peel Public Health (PPH) demonstrated a diverse range of methods, frameworks, and systems. In addition, nurses document according to varying policies, procedures, and guidelines. The lack of consistency and clarity regarding efficient, effective methods for nursing documentation has the potential to increase risk to clients, nurses, and the organization. PPH nursing staff also face technology challenges. Documenting in paper and electronic systems, which do not interface internally or with mandated provincial databases, takes away valuable nursing time from clients.

This review was conducted to explore the literature on the essential elements of quality nursing documentation to mitigate risk to the client, nurse and organization. Results will be used to inform decision-making regarding the nursing documentation system at PPH.

Anecdote

Nursing documentation has been on the Director of Communicable Diseases radar since her arrival at PPH over five years ago. Her appointment as Chief Nursing Officer further supported her desire to improve documentation across the health unit. Upon discovering the multiple

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[i] For example, Ontario Public Health Standards, Health Protection and Promotion Act, Personal Health Information Protection Act

methods, primarily unstructured, being used to chart client interactions across her own Division, she expanded her investigation. Concerns grew once it was discovered that the same issues were occurring across the health unit. These concerns led to nursing practice questions related to risk due to the lack of consistency in documentation.

2 Context

In Ontario, the Chief Nursing Officer for each public health unit is responsible for quality assurance and continuous quality improvement.[2] Internal PPH differences in audit processes, use of electronic systems, and forms of documenting supported the need for this review of the literature to address both risk mitigation and quality assurance concerns. A situational assessment of PPH's 18 programs revealed the following numbers highlighting documentation concerns:

- 17 programs use forms, 11 of which have protocols for how to complete the forms

- 8 programs currently have audit structures in place

- 4 programs have documentation frameworks

- 10 programs have duplicate charting (nurses chart the same information in more than one place)

- 12 programs use lengthy narrative notes.

All nurses practicing in Ontario must follow the practice standards prescribed by the College of Nurses of Ontario (CNO). In its Documentation Standards, the CNO states "Nurses are required to make and keep records of their professional practice. As regulated health care professionals, nurses are accountable for ensuring that their documentation is accurate and meets

the College's practice standards"[3](p4). The CNO outlines elements that must be included in a client record and principles that must be adhered to. All documentation completed on paper must be legible and written in permanent ink. Required elements include the date and time care was provided and recorded, the nurse's full signature or initials with professional designation, a clear and concise recording of care and individualized plan (following nursing process of assess, plan, implement, evaluate), and notation of informed consent. Documentation principles include ensuring documentation is accurate, timely, completed chronologically in the next available entry space, complete, and that the client's confidentiality is maintained. Nurses must never delete or modify another nurse's documentation.

The CNO's standards include broad strategies for documentation systems but the design and essential elements of the system are the responsibility of individual organizations. Organizations are responsible for identifying the definition of "timely" documentation and what defines a late entry, which objective and subjective data should be documented, and for ensuring duplication of documentation is minimized. The challenge for PPH is to design a client-focused system that meets the needs of diverse public health programming areas and mitigates risk.

At Nursing Forums concerns related to legal issues and documentation have been raised, and comments that nurses are supportive of changes to documentation structure but not necessarily content have been voiced. Nurses need to feel supported by PPH in their documentation, as they must ensure their documentation meets College standards and will be sufficient in legal situations.

The documentation initiative vision is to have standardized, effective and efficient documentation while mitigating risk to clients, nurses, and the organization. The documentation system will facilitate PPH's future move to both an electronic medical record and the Panorama

system. High quality documentation is valued as an integral component of practice and a means for accurately communicating nursing actions and client outcomes.

Definitions

Clinical Pathways (CPW) - A structured multidisciplinary plan of care that meets at least three of the following four criteria:

1. The intervention is used to channel the translation of guidelines or evidence into local structures.
2. The intervention details the steps in a course of treatment or care in a plan, pathway, algorithm, guideline, protocol or other inventory of actions.
3. The intervention has time-frames of criteria-based progression (i.e., steps are taken if designated criteria are met).
4. The intervention aims to standardize care for a specific clinical problem, procedure or episode of care in a specific population.[5]

Computerized Record - An electronic record of care that is planned or given to individual patients and clients.

Structured Documentation - Documentation that is guided by a framework and/or forms such as care plans or flow sheets.

3   Conceptual Framework

A conceptual model depicting the factors that influence and are affected by nursing documentation was developed with input from the Chief Nursing Officer and Nursing Professional Practice Reference Group (Appendix A). It is expected to evolve as nursing documentation in PPH evolves and will become the model supporting the finalized nursing documentation system.

4   Literature Review Question

The research question is:

What are the essential elements of nursing documentation that mitigate risk as defined by better

client, nurse, and organizational outcomes?

In PICO format, this research question is:

Population (P)	Nurses
Intervention (I)	Documentation
Comparison (C)	Nil
Outcome of Interest (O)	Risk mitigation (better outcomes) for clients, nurses, and the organization

5   Literature Search

The authors of this review, along with the Chief Nursing Officer, a PPH Librarian,

knowledge broker, and an Associate Medical Officer of Health, developed the initial search

strategy. Following this, multiple scoping searches on nursing documentation, charting, and/or

nursing records and risk were completed to gain a sense of the literature (See Appendix B for

Search Strategy). Databases and websites searched included CINAHL, Medline, Cochrane

Database of Systematic Reviews, Scopus, PubMed Clinical Queries, Healthstar, Duckduckgo,

and Nursing and Allied Health. Date limits for these searches were from 2003 to present.

Searches, without limits, were also performed of National Institute for Health and Care

Excellence (NICE), Trip, healthevidence.ca, Health Systems Evidence, and the Agency for

Healthcare Research and Quality (AHRQ).

Following retrieval of the 2009 Cochrane Review by Urquhart, Currell, Grant & Hardiker,[4] the lead author was contacted and an update was unavailable. Reproducing the search did not yield additional relevant articles.

6 Relevance Assessment

Two reviewers assessed relevance based on title and abstract. Differences were resolved by discussion. Papers were included based on the following criteria:

- Synthesized research of any design

- Setting similar to Canada (United States, Europe (incl. United Kingdom), Australia, New Zealand)

- All clinical or community settings

- Research/reviews assessing the effect of nursing documentation systems, such as paper based, electronic, standardized language/terminology, preformatted or structured

- Research/reviews reporting risk mitigation outcomes for clients, nurses or organizations, and health outcomes for the client

- Publications describing effective nursing documentation requirements or guidelines

- English language

- Published in the last 10 years.

Exclusions were based on:

- Papers describing documentation of health professionals other than nurses

- Contextual papers, editorials, letters and case studies

- Publications describing the implementation of documentation systems.

7 Search Results

The search yielded a total of 1,318 articles, including duplicates, 1,299 of which did not meet relevancy based on title. Of the remaining 19 articles, 10 were excluded based on abstract screening and the remaining nine were retrieved for full-text review. Of these, four were excluded following the full-text review as they did not meet the inclusion criteria. The remaining five reviews were assessed for quality (Appendix C).

8 Critical Appraisal

Two reviewers critically appraised the five reviews independently using the HealthEvidence *Quality Assessment Tool – Review Articles*. Following the independent appraisals, differences were resolved through discussion with an additional reviewer.

Two reviews were excluded based on weak ratings. The three remaining reviews were rated as strong and included in this rapid review.[4,5,6]

9 Description of Included Studies

Two systematic reviews and one meta-study were included for analysis in this review (Appendix D):

1. Urquhart, et al. (2009)[4] - *Nursing record systems: Effects on nursing practice and healthcare outcomes* (systematic review)

2. Rotter et al. (2010)[5] - *Clinical pathways: Effects on professional practice, patient outcomes, length of stay and hospital costs* (systematic review)

3. Jefferies, Johnson, & Griffiths (2010)[6] - *A meta-study of the essentials of quality nursing documentation* (meta-study)

Effectiveness Systematic Review #1 - Urquhart et al. (2009)[4]

This systematic review assessed the effects of nursing record systems on nursing practice and patient outcomes. Nine studies were included: four assessing manual nursing record systems versus computerized systems, three examining centrally-held versus patient-held nursing records, and two evaluating differently structured paper records. For the purpose of this review, analysis of the three studies examining patient-held records was not included. Heterogeneity prevented statistical pooling for any of the studies in this review. The authors combined the results narratively.

Two randomized control trials (RCTs) evaluated the effect of structured paper records, such as flow charts or care plans, compared to unstructured records on patient and nurse outcomes. Both studies took place in hospitals and evaluated patient, nurse, and organizational outcomes.

Three RCTs and one controlled before-and-after (CBA) study evaluated the use of a computerized, care-planning system in comparison to a manual, paper-based system. Three studies took place in medical centres and the fourth in a long-term care facility. The time between the introduction of the computerized system and data collection for the studies varied from seven weeks to seven months in three of the studies and was not reported for one RCT, in which data were collected for a total of 30 months. The most commonly reported outcomes were related to nursing practice and documentation time, and two studies included patient outcomes.

Effectiveness Systematic Review #2 - Rotter et al. (2010)[5]

This systematic review evaluated the effectiveness of clinical pathways (CPWs) on professional practice, patient outcomes, length of stay, and hospital costs. After developing a definition of a CPW, the authors included 27 studies that compared a CPW as either a single

intervention or as part of a multifaceted approach to usual care. Multifaceted approaches

included the introduction of a CPW in combination with a case management model, professional

education, or information technology support. Studies were statistically combined when

appropriate. Hospital cost outcomes were not included as part of this rapid review as they were

not relevant for the review question.

A large number of outcomes were reported across the 27 studies. CPWs were implemented

in numerous hospital-based settings and for a variety of health issues, e.g., asthma, stroke care,

diabetes. Three hospital-based studies - one CBA, one RCT and one interrupted time series -

measured the impact of CPWs on documentation quality and quantity. Quality and quantity

measurements included percentage of documentation completed for asthma severity and

compliance for documentation of team goals for patients. The studies also reported on patient

and organizational outcomes. Fifteen studies reported on length of stay, which was primarily

reported as an economic measure and surrogate for hospital costs. All included studies reported

on patient outcomes with varying lengths of follow-up.

Meta-Study – Jefferies, Johnson, & Griffiths (2010)[6]

The primary objective of this qualitative meta-study was to synthesize all relevant nursing

documentation information and develop the essential aspects of quality nursing documentation.

The authors performed an initial search to clarify the most important issues in documentation,

from which they developed themes to guide their second literature search. The second search

was guided by the following question: "What are the main aspects (principles) of quality

(accurate, concise, relevant) nursing documentation of patient care?" (p114).

The meta-study included 28 articles of various types and quality ratings. The authors

focused on articles that informed the research question and added insight and therefore no

articles were rejected on quality appraisal scoring alone. A secondary objective of the study

included completion of a policy analysis of local health facilities' documentation policies with

the goal of creating one overarching policy to guide nursing documentation.

10 Synthesis of Findings

This section includes a summary of the two systematic reviews followed by a description of

the results from the qualitative meta-study. A brief summary of the results from the systematic

reviews is provided in Table 1 below. See Appendix E for a detailed summary of the evidence

from the two systematic reviews.[4,5]

Table 1   Summary of Effects of Documentation Interventions on Patient, Nurse, and
                 Organization Outcomes from 2 Effectiveness Systematic Reviews[4,5]

	Patient	**Nurse**	**Organization**
Clinical Pathways	Positive	Positive	Mixed
Computerized Records	No effect	Mixed	Mixed
Structured Documentation	Positive	Positive	Positive

Patient Outcomes

Clinical pathways and structured forms of documentation had positive effects on patient

outcomes. Computerized records did not.

a. Clinical Pathways

CPWs were shown to have a positive effect on in-hospital complications. Seven studies

evaluated the effects of CPWs on in-hospital complications. In the five pooled studies, the use of

a CPW compared to usual care resulted in a 42% reduction in in-hospital complications (OR 0.58; 95% CI 0.36, 0.94; p= 0.028). There was an absolute risk reduction was 5.6%, translating to the prevention of one complication for every 17 patients treated using a CPW. One study could not be pooled and the seventh study implemented a CPW as part of a multifaceted intervention and found a comparative reduction in the number of complications identified (4.8 to 3.7; p = 0.014). The use of CPWs also resulted in significant reductions in the duration of both mechanical ventilation and antibiotic infusion. CPWs had no effect on either risk of readmission up to six months or in-hospital mortality at 26 weeks.

b. Computerized Records

There were no effects on any patient outcomes in two studies evaluating the use of computerized record systems compared to manual documentation systems.

c. Structured Documentation

In one study pain intensity ratings were significantly lower in patients cared for using a flow sheet (6.8/10 in the control group versus 4.2/10 in the group cared for using a flow sheet). The use of a care plan had no effect on hospital readmission.

Nursing Outcomes

Clinical pathways, computerized record systems and structured documentation had varied effects on nursing outcomes, including documentation, time, and practice. Clinical pathways improved documentation quality and quantity. Computers had mixed effects on documentation and nursing practice time, while structured documentation resulted in positive practice outcomes.

a. *Clinical Pathways*

Three studies looked at the effect of a CPW on documentation quality and quantity. In two studies, the use of CPW compared to usual care resulted in health care providers being 12 times more likely to have improved documentation quality and quantity (OR 11.95, 95% CI 4.72, 30.30; p < 0.00001).[5] There were no effects of CPWs on documentation in the third study, an interrupted time series design.

b. *Computerized Records*

Three studies reported on time spent documenting, with mixed results. Two studies found a negative effect of the computerized system on time spent documenting. Time increased for planning and documenting tasks (4.8min compared to 2.0min per day; p=0.004), nursing care planning, and report writing (6.6min compared to 4.7min per day; p=0.019). Contrary to these studies, one study reported less time spent on documenting with a computerized system. This study looked at nursing documentation and activities divided over several phases in their hospital unit and found that documentation time decreased for the registration process (14.4% of observations compared to 20.5%; difference -6.1%; 95% CI -8.1, -4.0) and for logging and validating hourly checks (20.3min compared to 28.8min). In this study, the authors reported that the difference in proportion of time spent on documentation compared to patient care varied with time following admission.

Several studies examined the impact of computerized systems compared to manual documentation on nursing practice and nursing practice time. Vital sign annotations increased with the use of a computer record while logging and validation of hourly checks decreased. Computerized record systems had no effect on the human resources outcomes including sickness, overtime, and job turnover.

Computerized records were found to increase the time spent on admission (18.1 ± 4.1min compared to 16.8 ± 3.1min, difference 1.3 min, 95% CI 0.04, 2.72) and reviewing or writing medical and nurses' notes compared to a manual system (9.4% compared to 5.0%). One positive result related to an increase in nursing practice time: during the registration process in one study, nurses spent more time on patient care following the introduction of the computerized system (61% of observations compared to 54.9%, difference 6.1%, 95% CI 3.5 to 8.8). Of note, no effect on care planning time or time spent on unit-related or personal activities resulted from the use of a computerized record.

c. Structured Documentation

A flow sheet increased the frequency of nursing assessments and the amount of analgesia administered. Using a care plan produced higher accuracy of planned length of stay compared to no care plan (the unadjusted mean difference of actual LOS minus planned LOS was 2.5 ± 5.6 days compared to 3.8 ± 6.5 days; p=0.02), but had no effect on completing the plan of action.

Organizational Outcomes

Clinical pathways and structured documentation reduced hospital length of stay and computerized record systems significantly increased the number of activities and interventions nurses documented.

a. Clinical Pathways

There were mixed effects of CPWs on length of stay; of 15 studies reporting on this outcome, 11 reported significant reductions and four studies reported no effect.

b. Computerized Records

One study found no effect on the number of nursing diagnoses but a significant increase in the number of recorded interventions (p=0.001) and activities with the use of a computerized record (p=0.007) following introduction of the computerized record. This study also determined that it took a significantly longer amount of time to produce a computerized record than a paper-based record. For observations of one time period during the study it took 3.78 hours to produce the computer record compared to 2.31 hours for the paper record.

c. Structured Documentation

One study examining the effect of structured documentation reported a significant reduction in the mean length of hospital stay of 1.5 days with the use of a care plan.

Qualitative Exploration of the Essential Aspects of Quality Nursing Documentation

Following thematic analysis of 28 studies of varying methodologies, Jefferies et al.[6] developed seven themes, which they deemed the "essential aspects" of nursing documentation. The themes are as follows:

1. Nursing documentation should be patient centred.

2. Nursing documentation must contain the actual work of nurses including education and psychosocial support.

3. Nursing documentation is written to reflect the objective clinical judgement of the nurse.

4. Nursing documentation must be presented in a logical and sequential manner.

5. Nursing documentation should be written contemporaneously, or as events occur.

6. Nursing documentation should record variances in care within and beyond the health-care record.

7. Nursing documentation should fulfill legal requirements.

Their caveat with theme six is that "…this theme has proven to be controversial, and all clinical areas must use their own professional judgement and identify individual issues that must always be included in the nursing documentation" (p120). These themes were used to create a policy for nursing documentation that was implemented across diverse nursing settings in a variety of health care organizations.

11 Applicability and Transferability

PPH management and frontline nursing staff participated in a facilitated discussion regarding feasibility and generalizability of this report.

Applicability

Political Acceptability

The current climate at PPH is supportive of documentation changes that would mitigate risk to clients, nurses, and the organization. Management staff, including the Medical Officer of Health (MOH), are supportive of increased efficiencies and effectiveness that translate to frontline staff achieving targets and improving health outcomes. Nursing documentation changes have the potential to further solidify PPH's place as a leader in evidence-informed public health practice in Ontario. Completing and sharing the results of this review during conferences and workshops will increase the profile and positive image of PPH. Changes to nursing documentation will affect up to 350 staff. Large scale changes require that management staff create and implement a change management plan to ensure frontline staff are well-informed

and receptive. Careful attention must be paid to the development of key messages and the framing and delivery of the changes.

Social Acceptability

It is important to align any documentation changes with College of Nurses of Ontario and legislative requirements. As changes in documentation may change the workflow and work day of nurses, it is important for management to design strategies to cope with these potential outcomes. Public health nurses will likely perceive changes in documentation that result in risk mitigation and efficiencies in practice as helpful. Staff acknowledges that large scale changes will be time consuming during training and implementation phases but will result in long-term efficiencies.

The language and tone of the key messages must be supportive and positive to assist adoption of the changes.

Available Essential Resources

A well-established committee structure supports the documentation initiative. Committees with nursing representatives at all staffing levels from the three Divisions are already working on evaluating and improving their documentation practices. These committees could be used to develop resources and training. If the decision is made to implement clinical pathways, development of the pathways and training staff would be resource and time intensive. Concerns were raised regarding the length of time that would be required for training resulting from any changes to documentation and that this would take staff away from their work with clients. These concerns are outweighed by the benefits of increased efficiencies and risk mitigation.

Organizational Expertise and Capacity

Nursing documentation is an important issue across all three divisions that employ nurses. Cross-divisional work is essential for maximizing resources and ensuring a consistent approach to documentation. The three divisions are motivated and supportive of changes and share information willingly. The Public Health Management Team has approved and the MOH has signed the Vision and Philosophy for Nursing Documentation. They have endorsed the current draft policy and procedures, which will continue to evolve as the initiative progresses. Facilitators will need to overcome potential challenges such as varied needs across multiple programs, conflicting priorities, and achieving support from nurses who are being asked to make changes to long-standing practices. Larger system challenges include the current information technology infrastructure and the desire to coordinate multiple paper-based and electronic documentation systems.

Transferability

The documentation situational assessment validated that there are multiple frameworks and systems being used within PPH. Multiple systems often necessitate duplication of documentation and increased demands for file storage. It is important to ensure that any changes to documentation are program specific and meet professional standards as well as legislation requirements.

The reviews included in this research were primarily hospital-based but offered some general findings that are transferable for staff at PPH providing programs and services to individual clients. Implementing CPWs and structured documentation could have positive effects on clients, nurses, and the organization. Computerized record systems, such as an electronic medical record, could benefit nurses and the organization. To ensure success of any of

these interventions, PPH needs to create resources and conduct thorough staff training for all staff involved in using the systems. Pilot projects may offer an opportunity to trial new methods, such as CPWs and various frameworks for structured documentation.

12 Recommendations

1. Create policies, procedures, and guidelines for nursing documentation that include the essential elements of quality nursing documentation as outlined by Jefferies et al.[6]

2. Investigate feasibility of implementing clinical pathways for programs that provide individual client care, e.g., Communicable Disease Investigations, Healthy Sexuality, Breastfeeding, and Healthy Babies, Healthy Children.

3. Implement clinical pathways or structured documentation (e.g., flow sheets, care plans) across all areas of public health nursing prior to the introduction of an electronic medical record and Panorama to facilitate the transition to these systems.

4. Continue research into and implementation of an electronic medical record system to improve quantity and quality of nursing documentation.

5. Develop indicators and collect baseline data regarding current documentation practices for outcomes at the client, nurse, and organization levels.

6. Monitor and evaluate outcomes following the introduction of the documentation system, and publish as appropriate.

References

1. College of Nurses of Ontario Standards and Guidelines. [Various].
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4. Urquhart, C., Currell, R., Grant, M.J., & Hardiker, N.R. (2009). Nursing record systems: Effects on nursing practice and healthcare outcomes. *Cochrane Database of Systematic Reviews*, *1*. Art. No.: CD002099. DOI: 10.1002/14651858.CD002099.pub2

5. Rotter, T., Kinsman, L., James, E.L., Machotta, A., Gothe, H., Willis, J., Snow, P., & Kugler, J. (2010). Clinical pathways: Effects on professional practice, patient outcomes, length of stay and hospital costs. *Cochrane Database of Systematic Reviews*, *3*. Art.No.:CD006632. DOI: 10.1002/14651858.CD006632.pub2

6. Jefferies, D., Johnson, M., & Griffiths, R. (2010). A meta-study of the essentials of quality nursing documentation. *International Journal of Nursing Practice, 16*: 112-124. doi:10.1111/j.1440-172X.2009.01815.x

Appendices

Appendix A: Conceptual Model

Appendix B: Search Strategy

Appendix C: Literature Search Flowchart

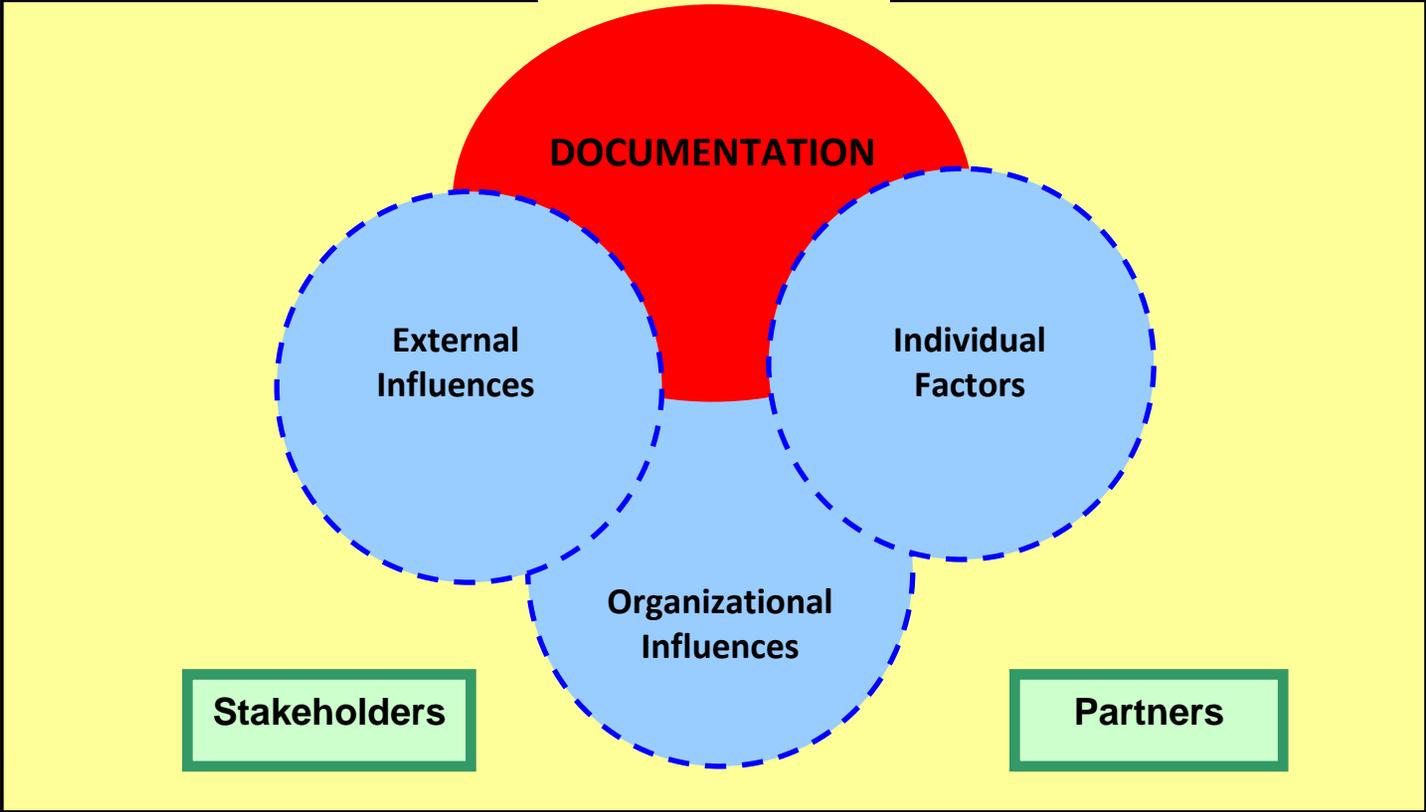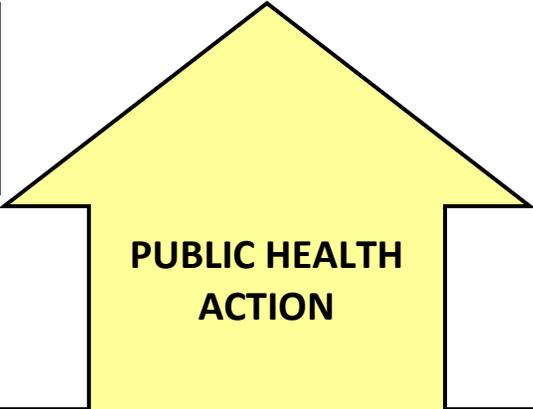**Appendix D: Data Extraction Tables**

Appendix E: Data Synthesis Table

Appendix F: Applicability & Transferability Worksheet

Appendix A: Conceptual Model

Client Outcomes

Peel Public Health's Nursing Documentation system is an efficient, effective, high quality system that supports the achievement of client outcomes.

PUBLIC HEALTH ACTION

DOCUMENTATION

External Influences

Individual Factors

Organizational Influences

Stakeholders

Partners

28

Appendix B: Search Strategies

Search Date: February 4, 2013:

Database: Ovid MEDLINE(R) <1946 to January Week 4 2013>
Search Strategy:

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1   nursing document*.tw. (538)

2   exp Documentation/ (775403)

3   Nursing Records/ (6137)

4   2 or 3 (780324)

5   1 and 4 (392)

6   risk.tw. (1007498)

7   5 and 6 (19)

Search Date: February 19, 2013

Note – this search strategy was also used to search the Nursing and Allied Health Database on February 19, 2013 and yielded 66 hits

Database: Ovid Healthstar <1966 to January 2013>, Ovid MEDLINE(R) <1946 to February Week 1 2013>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <February 19, 2013>
Search Strategy:

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1   Nursing Records/ (12512)

2   nursing documentation.ti. (514)

3   1 or 2 (12603)

4   risk*.tw. (2099274)

5   legal.tw. (93413)

6   liabilit*.tw. (27051)

7   4 or 5 or 6 (2199415)

8   3 and 7 (853)

9   limit 8 to (english language and yr="2002 -Current") (295)

10   "hospital*".m_titl. (392475)

11   9 not 10 (273)

12   meta-analysis.mp,pt. (123178)

13   (search or systematic review or medline).tw. (310003)

14   cochrane database of systematic reviews.jn. (18637)

15   or/12-14 (386261)

16   exp guideline/ (39618)

17   (practice guideline or guideline).pt. (49435)

18   16 or 17 (49435)

19   15 or 18 (433305)

20   (comment or letter or editorial or note or erratum or short survey or news or newspaper article or

patient education handout or case report or historical article).pt. (2765857)

21   19 not 20 (415497)

22   11 and 21 (4)

23   remove duplicates from 22 (2)

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Search Date: February 20, 2013

Number of hits from this search: 11

TI "nursing documentation" OR MM nursing records OR MM charting NOT TI hospital	Limiters - Published Date from: 20020101-20131231; English Language; Publication Type: Meta Analysis, Meta Synthesis, Systematic Review

Search Date: March 8, 2013
Number of hits from this search: 181

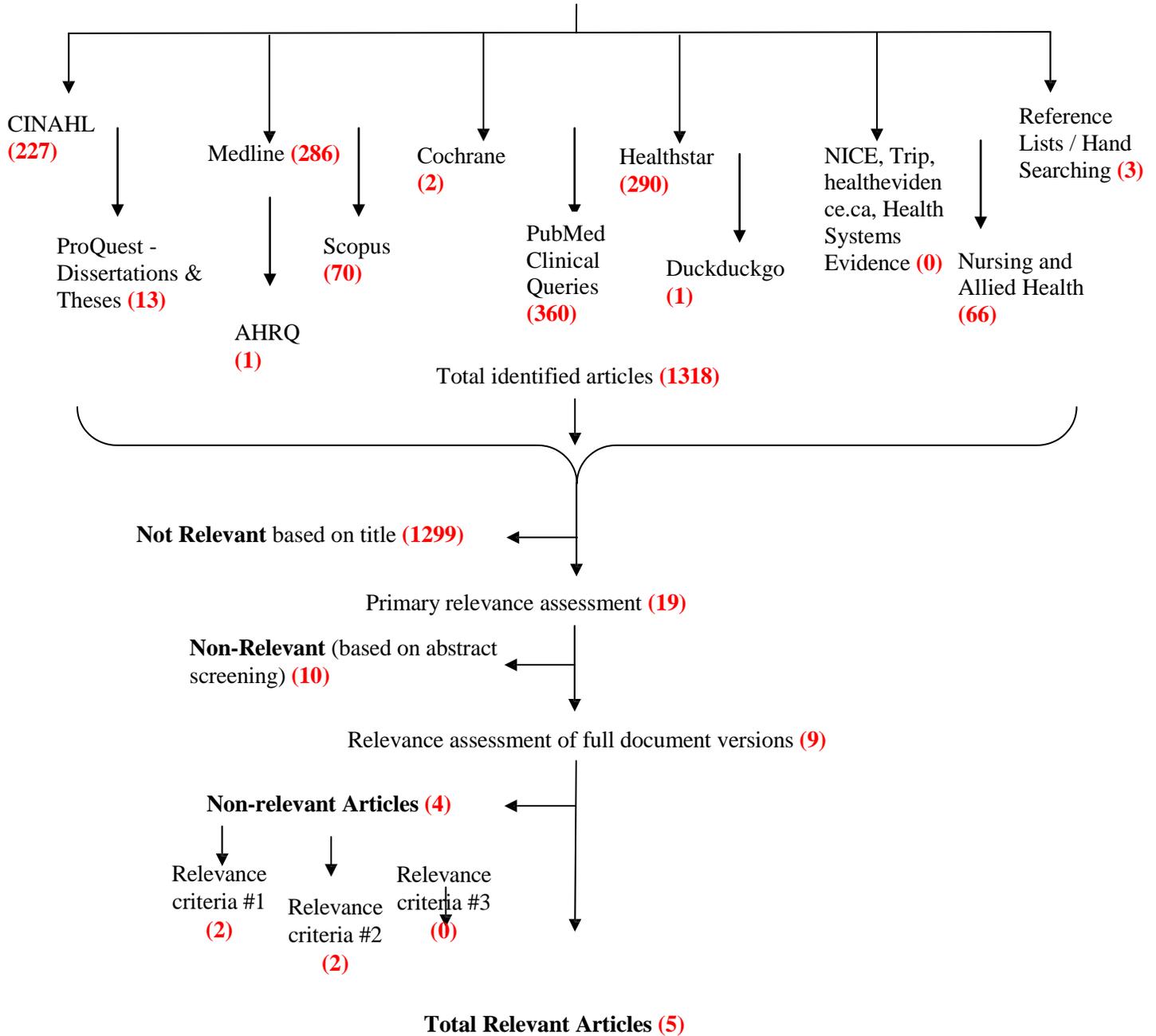Database: CINAHL Plus with Full Text

outcome* and "nursing documentation" or "nursing report* or "progress note*"

Appendix C: Literature Search Flowchart

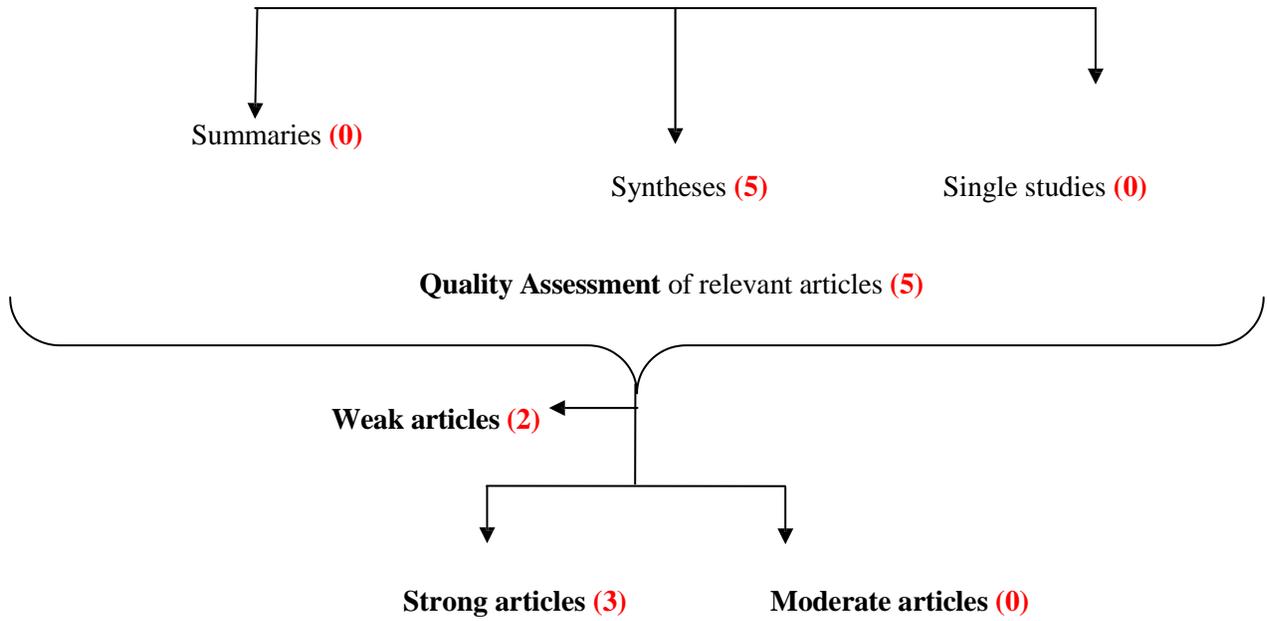**What elements of nursing documentation are essential to mitigate risk**

As defined by better client, nurse, and organizational outcomes?

(Multiple searches occurred between February to April 2013)

CINAHL **(227)**

ProQuest - Dissertations & Theses **(13)**

Medline **(286)**

AHRQ **(1)**

Scopus **(70)**

Cochrane **(2)**

PubMed Clinical Queries **(360)**

Healthstar **(290)**

Duckduckgo **(1)**

NICE, Trip, healthevidence.ca, Health Systems Evidence **(0)**

Reference Lists / Hand Searching **(3)**

Nursing and Allied Health **(66)**

Total identified articles **(1318)**

Not Relevant based on title **(1299)**

Primary relevance assessment **(19)**

Non-Relevant (based on abstract screening) **(10)**

Relevance assessment of full document versions **(9)**

Non-relevant Articles (4)

Relevance criteria #1 **(2)**

Relevance criteria #2 **(2)**

Relevance criteria #3 **(0)**

Total Relevant Articles (5)

LITERATURE FLOWCHART CONT.

Summaries **(0)**

Syntheses **(5)**   Single studies **(0)**

Quality Assessment of relevant articles **(5)**

Weak articles (2)

Strong articles (3)   **Moderate articles (0)**

Appendix D: Data Extraction Tables

Review	Rotter, T., Kinsman, L., James, E.L., Machotta, A., Gothe, H., Willis, J., Snow, P., & Kugler, J. (2010). Clinical pathways: Effects on professional practice, patient outcomes, length of stay and hospital costs. *Cochrane Database of Systematic Reviews*, *3*. Art.No.:CD006632. DOI: 10.1002/14651858.CD006632.pub2
General Information and Quality Rating	
Countries of Studies included in Review	United States (13), Australia (4), Japan (3), United Kingdom (2), Canada (2), Thailand (1), Taiwan (1), Norway (1)
Quality Rating (independently rated by 2 reviewers)	10 (strong)
Details of Each Review	
Evidence Used to Develop this Review	**Primary Objective** To assess the effect of clinical pathways (CPWs) on professional practice, patient outcomes, length of stay (LOS) and hospital costs. **Total # of Studies included: 27**
Types of Studies	19 Randomized Control Trials (RCTs) (2 cluster) 2 Controlled Clinical Trials (CCTs) 4 Controlled Before and After Studies (CBAs) 2 Interrupted Time Series Analysis (ITS)
Methods	Meta-analysis was conducted if there were enough comparable primary studies or a subgroup of studies. When significant heterogeneity existed, studies were narratively combined and described.
Search Time Period	1950 – 2007
Number and Details of Databases Searched	8 – DARE, Cochrane Effective Practice and Organisation of Care Register (EPOC), Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, CINAHL, NHS EED, Global Health
Inclusion / Exclusion Criteria	**Inclusion** Cochrane (EPOC) methodological design and quality criteria used; RCTs, CCTs, CBAs, and ITS are included 3 types of participants were used: health professionals involved in using CPWs, hospitalized patients being managed using a CPW, hospitals evaluating impact of CPWs The following five criteria were derived from three sentinel articles and were used to formulate the definition of a CPW that was used for inclusion in the review:

33

	1. The intervention was a structured multidisciplinary plan of care. 2. The intervention was used to channel the translation of guidelines or evidence into local structures. 3. The intervention detailed the steps in a course of treatment or care in a plan, pathway, algorithm, guideline, protocol or other inventory of actions. 4. The intervention had time-frames of criteria-based progression (i.e., steps were taken if designated criteria were met). 5. The intervention aimed to standardize care for a specific clinical problem, procedure or episode of care in a specific population. An intervention was defined as a CPW if it was a structured multidisciplinary plan of care and at least three of the remaining four criteria were met (i.e., it met the first criteria and any three of the remaining four). Authors included all objectively measured patient outcomes, professional practice, length of stay (LOS) and hospital costs. **Patient Outcomes** - inpatient mortality, mortality at longest follow-up, hospital readmissions, in-hospital complications, adverse events, ICU admissions, discharge destination **Professional Practice Outcomes** - quality measures appropriate to the specific aim of the CPW, staff satisfaction and adherence to evidence-based practice (e.g., time to mobilisation post surgery or effects on quantity and quality of documentation) **Length of stay (LOS)** (**NOTE** - Most of the included studies predefined LOS as an economic measure and a surrogate for hospital costs) - assessed by extracting the duration of hospital stay measured in hours or days that were reported in the included studies **Hospital Costs** (**NOTE** – cost outcomes not included in this rapid review) - cost of hospitalisation and any appropriate resource utilisation data as a surrogate measure for studies that did not report primary hospital-cost-data, for example hospital charges data and country-specific insurance points Exclusion - dissemination of clinical practice guidelines alone, unless the guidelines were translated into a CPW - studies that did not meet EPOC methodological design and quality criteria - studies classified as high risk of bias using EPOC Risk of Bias Tool
Quality Appraisal	EPOC Risk of Bias Tool (had to be low or moderate risk for inclusion)
Details of Interventions Included in Review	

Description of Interventions	The use of a CPW* either on its own or as part of a multifaceted intervention (e.g., case management elements, complex quality improvement programs, counselling methods, using CPW in conjunction with external providers or extended care agencies, posters, physician order sheets, reminders by study nurse). * definition of CPW developed and used by authors described above
Target Groups	- health professionals involved in CPW utilization in hospital setting - hospitalized patients - hospitals evaluating the impact of CPWs
Outcome Measurements in the Review	

Primary Outcomes
(all outcomes were objectively measurable)
	Patient Outcomes
	   - inpatient mortality, mortality at longest follow-up, hospital readmissions, in-hospital complications, adverse events, ICU admissions and discharge destination
	
	Professional Outcomes
	   - quality measures appropriate to the specific aim of the CPW
	   - staff satisfaction, adherence to evidence-based practice
	
	Length of Stay (LOS) - duration of hospital stay measured in hours or days as reported
	
	Hospital Costs – based on the rapid review question, these outcomes were not included for data extraction

Results of Review	

Main Results	<u>**For studies comparing stand-alone CPW to usual care:**</u>
	1. Improved documentation
	  - 3 studies measured impact of CPWs on documentation quality and quantity
	  - results of 2 studies were pooled with OR 11.95, 95% CI 4.72 - 30.30 (p <0.00001) with significant results favouring improved documentation (Analysis 2.21)
	  - authors noted that while "…improved documentation may not appear to be an outcome that directly influences patient outcomes, any intervention that enhances communication must have a favourable influence on patient care (Jorm 2009)" (p46)
	  - 3rd study was an interrupted time series and found no effect on documentation with use of CPW
	
	2. Reduction in in-hospital complications associated with introduction of CPWs
	  - 7 studies reported on in-hospital complications
	  - 5 studies (all had moderate risk of bias) combined and indicated a reduction in in-hospital complications; OR 0.58, 95% CI 0.36 - 0.94 (p=0.028) (Analysis 2.19)
	  - pooled result from these 5 studies showed an absolute risk reduction of 5.6% for patients recovering from surgery who were managed on a CPW, corresponding to prevention of one complication for every 17 patients treated
	  - one study could not be pooled
	  - one study evaluated CPW as part of a multifaceted intervention and found a comparative reduction in

	- the number of complications identified (p = 0.014)
	
	 3. No evidence of difference in readmission to hospital or in-hospital mortality
	     - pooled OR on 6 studies for re-admissions was 0.6 (95% CI 0.32 – 1.13) but not statistically significant (Analysis 2.20)
	     - mortality: pooled OR for 3 studies was 0.84 (95% CI 0.61 – 1.11) favouring CPWs but was not statistically significant (Analysis 2.18)
	
	 4. Duration of mechanical ventilation
	     - in 2 pooled studies (one with low and one with moderate risk of bias), mean duration of mechanical ventilation decreased by 33 hours [combined WMD -33.72 (95% CI -55.73, -11.71; p=0.0027)]
	
	 5. Duration of Antibiotic Infusion
	     - in 2 studies with moderate risk of bias, duration of antibiotic infusion decreased by 1.70 [WMD -1.70 (95% CI -2.01, -1.40; p<0.00001)]
	
	 6. LOS
	     - mixed results from 15 studies: 11 studies showed significant reduction while 4 showed no statistical significance
	     - unable to pool due to heterogeneity
	
	 <u>For studies comparing CPWs as part of a multifaceted intervention to the same intervention without a CPW</u>:
	 No evidence of differences were found between intervention and control groups for any outcomes

Comments / Limitations	Extreme depth and breadth of outcomes in included studies led to clinical and statistical heterogeneity and therefore meta-analysis not appropriate for many of the outcomes. Lack of clear definition of a CPW in healthcare therefore authors developed their own criteria based on previous attempts to define. Many studies did not report baseline data.

Review	Urquhart, C., Currell, R., Grant, M.J., & Hardiker, N.R. (2009). Nursing record systems: Effects on nursing practice and healthcare outcomes. *Cochrane Database of Systematic Reviews, 1*. Art. No.: CD002099. DOI: 10.1002/14651858.CD002099.pub2
General Information and Quality Rating	
Countries of Studies included in Review	UK (3), USA (2), Germany (1), The Netherlands (1), Denmark (1), Canada (1)
Quality Rating (independently rated by 2 reviewers)	9 (strong)
Details of Each Review	
Evidence Used to Develop this Review	**Primary Objective** To assess the effects of nursing record systems on nursing practice and patient outcomes. The questions for the review were whether there is a measurable difference in nursing practice or patients outcomes between the use of: 1. a structured nursing record system and an unstructured system 2. a care plan and a nursing record system which does not include a formal care plan 3. a manual nursing record system and a computerized nursing record system 4. centrally-held nursing records and patient-held nursing records 5. a nursing record and a multidisciplinary record 6. a problem-oriented nursing record and a non-problem oriented nursing record 7. daily progress notes and charting by exception (i.e. only recording abnormalities or deviations from the plan instead of recording at regular intervals, even if there is no change or abnormality to report) <u>NOTE</u> No studies were found addressing questions 1, 2, 5, 6, and 7. 4 studies were found for question 3, 3 studies for question 4, and 2 studies compared differently structured paper records. **Secondary Objective** The review aimed to identify both beneficial and adverse effects of the use of different nursing record systems. The review also set out to establish gaps in knowledge and identify areas for further research, both in nursing and in informatics. **Total # of Studies included: 9**
Methods	The authors conducted a narrative synthesis as the significant heterogeneity between studies prevented meta-analysis.
Types of Studies	8 Randomized Control Trials (RCTs)

	1 Controlled Before and After Study (CBA)
Search Time Period	Original review went back in some databases to 1856; this review updated searches to 2008
Number and Details of Databases Searched	5 health databases: Cochrane Effective Practice and Organisation of Care (EPOC) Group Specialised Register, MEDLINE, EMBASE, CINAHL, BNI 2 additional databases: ISI Web of Knowledge, ASLIB Index of Theses
Inclusion / Exclusion Criteria	**Inclusion** Studies as described by the Cochrane EPOC Group: RCTs; controlled clinical trials; interrupted time series analyses (ITS); and CBAs Participants had to be qualified nurses (however defined in the country of origin of the study) and nurse students or other healthcare practitioners working under the direction of a qualified nurse. The term 'nurse' is used to include all qualified nurses, midwives, and health visitors; and to include all those working in hospital, the community, or primary care settings. Participants were also defined as patients receiving care that was recorded or planned using different nursing record systems. Included studies had interventions that compared the use of one kind of nursing record system with another in hospital, community, or primary care settings, including: 1. Multidisciplinary care records and patient-held records, where they formed the only or principal record of nursing care for individual patients 2. Systems based on standard care plans, applied to the care of individual patients 3. Systems designed to record specific aspects of direct nursing care and which form an integral part of the nursing record, such as pain control or wound management 4. Records in paper and electronic formats Outcome measures in included studies had to be objective measures of provider performance or patient outcomes. **Exclusion** 1. Studies of the following types of systems were excluded: 2. nurse management systems, such as those designed for rostering or workload measurement 3. systems designed for nurse education, unless they are applied to real patient care 4. ephemeral or informal means of communicating nursing care, such as nurses' personal notebooks, ward diaries, or verbal communication 5. systems such as risk assessment instruments which are not designed to be an integral part of the principal

	nursing record but are adjuncts only
	The researchers also excluded studies that were compromised by flaws in their design or execution and were thus unable to provide reliable data.
Quality Appraisal	EPOC Risk of Bias Tool

Details of Interventions Included in Review	
Description of Interventions	1. Client held records versus centrally held records (**NOTE** – not included in analysis for current rapid review as does not address review question)
	2. Comparing paper records of differing structures, e.g., flow sheet, integrated care plan (n=2): *Flow Sheets* – paediatric pain management flow sheet compared to conventional nurse charting methods *Integrated Care Plan* – patients had care plans (medical and nursing) incorporated into medical record compared to no care plans
	3. Computerized record versus paper record (n=4)
Target Groups	- qualified nurses (as defined by country of origin of study)
	- patients being cared for using nursing record systems

Outcome Measurements in the Review	
	Studies comparing paper records with differing structures (n=2)
	Nurse Outcomes
	- nurses' satisfaction with new documentation, accomplishment of plan of action
	Patient Outcomes
	- pain (intensity/duration/use of analgesics), length of hospital stay (LOS), risk of re-admission
	Studies comparing manual nursing care planning with computerized nursing care planning (n=4)
	Organizational Outcomes (deemed by study)
	- number of nursing diagnoses, interventions and activities, care plan preparation time
	Nurse Outcomes
	- process (care planning, teaching, discharge planning, perceived involvement), work satisfaction, competency in quality of care, intent to stay, job turnover, overtime, sick time use, nursing workload, record keeping (nurse time, quality of documentation, nurses attitudes towards system, physician attitudes to contribution of nursing documentation to medical decision making), time spent on documentation
	Patient Outcomes
	- self-care knowledge and readiness, length of stay, satisfaction with nursing care, patient acuity, level of care,

	activities of daily living, perception of pain, cognitive abilities, number of: medications, bowel medications, constipation episodes, weight, % of meals eaten, incidence of alteration in skin integrity

Results of Review

Studies comparing paper records with differing structures (n=2)	**Studies comparing manual nursing care planning with computerized nursing care planning** (n=4)
Patient Outcomes Positive effect for the use of flow sheets on pain rating; significant reduction in pain intensity (6.8/10 in the control group, and 4.2/10 in the experimental group; p<0.01) (Stevens, 1990) No effect on risk of readmission with use of care plan (From, 2003) *Nursing Outcome – Nursing Practice* Significant increase in frequency of assessments when using a flow sheet (5.4 versus 3.9 times in 24 hours, p<0.01) (Stevens, 1990) Significant increase in amount of analgesia used when using a flow sheet (total doses 78 versus 34; p<0.01) (Stevens, 1990) Significantly higher accuracy of planned LOS with use of care plan (the unadjusted mean difference of actual LOS minus planned LOS was 2.5 ± 5.6 days compared to 3.8 ± 6.5 days; p=0.02) (From, 2003) No effect on the accomplishment of the plan of action with use of a care plan (From, 2003) *Organizational Outcome* Significant difference (shorter) in mean LOS occurred with the use of a care plan compared to usual care (6.1 days compared to 7.6 days, a difference of 1.5 days, 95% CI 0.2, 2.7 days; p=0.02) (From, 2003)	*Patient Outcomes* No significant effects on patient outcomes with use of computerized care planning (Spranzo, 1993; Daly, 2002) *Nurse Outcome – Time Spent Documenting* Negative effect of computerized system on documenting nursing care planning (no p value; time increased with use of computer; data collected 6 weeks prior to and 3 months following introduction of computerized system) (Spranzo, 1993) Planning and documentation of tasks (4.8min compared to 2.0min per day; p=0.004) and report writing (6.6 min compared to 4.7 min per day; p=0.019) took significantly longer in computerized system (data collection began 7 weeks after introduction of computerized system and lasted 13 weeks) (Ammenwerth, 2001) Increase in proportion of time spent on shift change documentation with the use of a computerized record (10.1% compared to 6.7%; no p value) (Bosman, 2003) Significantly less time spent on documenting with computerized system for registration process (14.4% of observations compared to 20.5% (difference -6.1%; 95% CI -8.1, -4.0; no p value reported); computerized system introduced 7 months prior to trial; data collected for 6 weeks (Bosman, 2003) Decrease in time spent logging and validating hourly checks (20.3 min compared to 28.8 min; no p value) (Bosman, 2003) *Nurse Outcome – Nursing Practice Time* Mean duration of admission time significantly longer with computerized system (18.1 ± 4.1 min compared to 16.8 ± 3.1 min, and the difference (1.3 min) was statistically significant (95% CI 0.04, 2.72); no p value reported) (Bosman, 2003) No significant difference for care planning time (Ammenwerth, 2001) Significantly more time spent on patient care for registration process with

	computerized system (61% of observations compared to 54.9%, difference 6.1%; 95%CI 3.5 to 8.8; no p value) (Bosman, 2003) No significant difference in time spent on unit-related and personal activities (Bosman, 2003) The proportion of observations of time spent on reviewing or writing medical and nurses' notes increased with the use of a computerized record (9.4% compared to 5.0%; no p value) (Bosman, 2003) *Nurse Outcome – Nursing Practice* No significant effects on nurse sickness, overtime, or job turnover following introduction of computerized care planning (Spranzo, 1993) Number of vital sign annotations was significantly higher in computerized record (no p value) (Bosman, 2003) Number of logging and validation of hourly checks decreased with the introduction of computerized record (Bosman, 2003) *Organizational Outcomes* Similar number of nursing diagnoses recorded in computer compared to paper (Daly, 2002) Significantly more recorded interventions (p=0.001) and activities documented (p=0.007) with computer (Daly, 2002) Significantly longer time taken to produce computerized record than paper-based record; no mention of when data collection began; lasted for 30 months (for example 3.78 h versus 2.31 h for one time period; p=0.002) (Daly, 2002)
Comments / Limitations	Heterogeneity and diversity of included studies (interventions, outcomes) made it difficult to report findings. Selective reporting of outcomes in included studies. Incomplete outcome data in included studies. Despite being included, studies had multiple potential sources of bias.

Meta-Study	Jefferies, D., Johnson, M., & Griffiths, R. (2010). A meta-study of the essentials of quality nursing documentation. *International Journal of Nursing Practice, 16*: 112-124. doi:10.1111/j.1440-172X.2009.01815.x
Quality Rating	
Quality Rating (independently rated by 2 reviewers)	8 (strong)
Details of Review	
Evidence Used to Develop this Meta-Study **NOTE** The authors performed an initial examination of the literature to clarify issues associated with nursing documentation and then conducted their meta-study based upon themes that arose from the initial literature examination.	**Primary Objective** To synthesize all relevant information about nursing documentation and present the essential aspects (principles) of quality (accurate, concise, relevant) nursing documentation of patient care. **Secondary Objective (practical / operations objective of larger Project of which Set-Study was one component)** To systematically develop the essential aspects of nursing documentation that would guide nurses to produce quality nursing documentation across disparate settings. **Tertiary Objective** To analyse policies found in the 11 individual health facilities within the Area Health Service on nursing documentation to assess the concordance between the essentials defined by the meta-study with the existing policy requirements for nursing documentation **Total # of Studies included: 28**
Methods	The authors performed an initial scoping review to determine what the research literature identified as the most important nursing documentation issues. The initial review demonstrated a high degree of diversity within the research literature and subsequently the authors used a meta-study approach to synthesize and present major themes.
Types of Included Studies (see Table 2 in meta-study; methods and/or methodology was listed in column entitled 'Type of Study')	[Retrospective] Chart/Audit Review (n=8) Discourse Analysis Cross-sectional survey of retrospective chart audits Qualitative Study Pre-test/Post-test (n=2) Time-in-Motion Study Quasi-experimental (n=2) Secondary Source article Multiple methods (n=3) Exploratory Survey Literature Review Post-test mixed design/quantitative and qualitative Retrospective descriptive Telephone survey Descriptive study from archival data Opinion Action research
Search Time Period	1982 – 2008
Number and Details of Databases Searched	2 databases – CINAHL, MEDLINE
Inclusion / Exclusion	**Inclusion**

Criteria	The inclusion criteria were based on the clinical question. Articles were chosen because they could give relevant information to this question. **Exclusion** Articles were excluded if the major focus was not directly related to establishing quality in nursing documentation (Table 1 in meta-study)	
Quality Appraisal (of studies included in meta-study)	Used Joanna Briggs Institute Critical Appraisal Tools (multiple used given diversity of included articles) Also used the following rating system[ii]:	**NOTE** - authors state that no article was rejected on the grounds of quality appraisal scoring alone; "…the most important aspect of the quality appraisal was to determine whether the article was able to inform the research question…" (p115)

Rating	Results (number of studies in meta-study)
High (++)	1
Low (+)	25
Very Low (-)	1
N/A	1 (opinion article)

Results of Review

Themes "Essential Aspects of Nursing Documentation"	1. Nursing documentation should be patient centred 2. Nursing documentation must contain the actual work of nurses including education and psychosocial support 3. Nursing documentation is written to reflect the objective clinical judgement of the nurse 4. Nursing documentation must be presented in a logical and sequential manner 5. Nursing documentation should be written contemporaneously, or as events occur 6. Nursing documentation should record variances in care within and beyond the health-care record* * Authors' Caveat with this theme – "…this theme has proven to be controversial, and all clinical areas must use their own professional judgement and identify individual issues that must always be included in the nursing documentation." (p120) 7. Nursing documentation should fulfil legal requirements - the authors used these themes to create a policy (with the assistance of local clinical nursing experts) for all nurses working in every type of clinical setting in their Area Health Service - at time of publication, the policy was being implemented through education and audit and will be reported at a later date

[ii] Goldsmith, M.R., Bankhead, C.R., & Austoker, J. (2007). Synthesising quantitative and qualitative research in evidence-based patient information. *Journal of Epidemiology and Community Health, 61*: 262-270. doi: 10.1136/jech.2006.046110

Comments / Limitations	Per the authors, diversity of methods/methodology used to explore nursing documentation made it difficult to complete the review. The focus of the (qualitative) meta-synthesis was on findings, and not on method, thereby making it difficult for the authors of this rapid review to determine the specifics of the included studies and the methods used by the authors to arrive at their conclusions (themes). Despite contacting the lead author via email, minimal information was obtained to further clarify methods.

Appendix E: Data Synthesis Table

Outcome[iii]	Intervention		
	Clinical Pathway (CPW) compared to Usual Care[iv]	**Computerized Record System compared to Manual Record System**	**Structured Documentation (e.g., flow sheet, care plan) compared to Usual or No Structure**
Patient / Client Outcomes			
In-hospital complications	7 studies reported on in-hospital complications. 5 of the studies with moderate risk of bias were pooled and found patients were 42% less likely to have complication when a CPW was used [OR 0.58 (95% CI 0.36, 0.94; p= 0.028)]. The pooled absolute risk reduction was 5.6%, corresponding to the prevention of one complication for every 17 patients treated using a CPW. One study could not be pooled and one study used a CPW as part of a multifaceted intervention and found a comparative reduction in the number of complications identified (p = 0.014).	No effect on any patient outcomes (2 studies).	N/A
Pain	N/A		Pain intensity ratings were significantly lower in patients cared for using a flow sheet (6.8/10 in the control group, and 4.2/10 in the experimental group; p<0.01) (1 study).
Risk of readmission	No effect of CPWs on risk of readmission up to 6 months (6 studies).		No effect on hospital readmission observed when a care plan was used (1 study).

[iii] Where no effect size is reported, studies were narratively combined

[iv] When clinical pathways were implemented as part of a multifaceted intervention, no evidence of differences were found between intervention & control groups for any outcomes

Outcome[iii]	Intervention		
	Clinical Pathway (CPW) compared to Usual Care[iv]	Computerized Record System compared to Manual Record System	Structured Documentation (e.g., flow sheet, care plan) compared to Usual or No Structure
In-hospital mortality	No effect of CPWs on in-hospital mortality at 26 weeks (3 studies).		N/A
Duration of Mechanical Ventilation (hours)	In 2 studies, one with low and one with moderate risk of bias, mean duration of mechanical ventilation was 33 hours less with the use of a CPW [Combined WMD -33.72 (95% CI -55.73, -11.71; p=0.0027)] A third study, with low risk of bias, found a significant reduction in ventilation hours with the use of a CPW (p=0.00001) but could not be pooled.		N/A
Duration of Antibiotic Infusion	In 2 studies with moderate risk of bias, duration of antibiotic infusion decreased by 1.70 days with the use of a CPW [WMD -1.70 (95% CI -2.01, -1.40; p<0.00001)]		N/A
Nurse / Provider Outcomes			
Documentation Quality & Quantity	3 studies measured the impact of CPWs on documentation quality and quantity. 2 of the studies had moderate risk of bias and when pooled demonstrated that health care providers who documented with a CPW were 12 times more likely to have improved documentation quality and quantity [OR 11.95 (95% CI 4.72, 30.30); p < 0.00001] The third study was an interrupted time series analysis and found no effect on documentation with the use of a CPW.	N/A	N/A

Outcome[iii]	Intervention		
	Clinical Pathway (CPW) compared to Usual Care[iv]	Computerized Record System compared to Manual Record System	Structured Documentation (e.g., flow sheet, care plan) compared to Usual or No Structure

Documentation Time	N/A	Overall Mixed Effects (3 studies)
		• An increase in documentation time occurred with the use of a computerized record (2 studies)
		  - for planning & documenting tasks (4.8min compared to 2.0min per day; p=0.004), care planning, report writing (6.6min compared to 4.7min per day; p=0.019), and proportion of time spent on shift change documentation (10.1% compared to 6.7%)
		
		• A decrease in documentation time was observed with the use of a computerized record (1 study)
		  - during registration process (14.4% of observations compared to 20.5% (difference -6.1%; 95% CI -8.1, -4.0) and for time spent logging and validating hourly checks (20.3min compared to 28.8min) (1 study)
			N/A

Nursing Practice	N/A	The number of vital sign annotations was significantly higher in a computerized record (no p value) (1 study) The number of logging and validation of hourly checks decreased with the introduction of computerized record (1 study) No effect was observed on nurse sickness, overtime, job turnover following introduction of computerized records (1 study)	Increase in frequency of nursing assessments occurred with use of a flow sheet (5.4 versus 3.9 times in 24 hours; p<0.01) (1 study) Significant increase in amount of analgesia administered with the use of a flow sheet (total doses 78 versus 34; p<0.01) (1 study) Higher accuracy of planned length of stay was observed with a care plan (the unadjusted mean difference of actual LOS minus planned LOS was 2.5 ± 5.6 days compared to 3.8 ± 6.5 days; p=0.02) (1 study) No effect on completing plan of action when a care plan was used (1 study)
Nursing Practice	N/A	Demonstrated Positive Effect (1 study)	N/A

Outcome[iii]	Intervention		
	Clinical Pathway (CPW) compared to Usual Care[iv]	**Computerized Record System compared to Manual Record System**	**Structured Documentation (e.g., flow sheet, care plan) compared to Usual or No Structure**
Time		• There was a significant increase in the time spent on patient care during registration with use of a computerized record (61% of observations compared to 54.9%, difference 6.1%; 95% CI 3.5 to 8.8) . Demonstrated Negative Effect (1 study) • There was a significant difference (increase) in duration of admission time when using computerized record compared to manual record (18.1 ± 4.1 min compared to 16.8 ± 3.1 min, and the difference (1.3 min) was statistically significant (95% CI 0.04, 2.72). • The proportion of time spent on reviewing or writing medical and nurses' notes increased with the use of a computerized record (9.4% compared to 5.0%). No Effect (2 studies) • No effect on care planning time occurred with use of computerized record (1 study). • No difference was observed in time spent on unit-related or personal activities with the use of computerized record (1 study).	
Organizational Outcomes			
Length of Stay[v] (LOS)	There were mixed effects of CPWs on LOS (15 studies). 11 studies showed significant reductions and 4 studies had no effect on LOS.	N/A	Significant difference (shorter) in mean LOS occurred with the use of a care plan compared to usual care (6.1 days compared to 7.6 days, a difference of 1.5 days, 95% CI 0.2, 2.7 days; p=0.02) (1 study)
Number of Nursing	N/A	A similar number of nursing diagnoses were made in the	N/A

[v] Most included studies predefined LOS as an economic measure and surrogate for hospital costs and reflect hospital practices with respect to hospitalization

Outcome[iii]	Intervention		
	Clinical Pathway (CPW) compared to Usual Care[iv]	Computerized Record System compared to Manual Record System	Structured Documentation (e.g., flow sheet, care plan) compared to Usual or No Structure
Diagnoses, Interventions, and Activities		computerized record and manual system (1 study). A significant increase in number of recorded interventions (p=0.001) and activities (p=0.007) occurred with use of computerized record (1 study).	
Time Spent on Care Planning	N/A	A significantly longer time was taken to produce a computerized record compared to a paper based record (for example 3.78h versus 2.31h for one time period; p=0.002) (1 study).	N/A

Appendix F: Applicability & Transferability Worksheet

Factors	Questions	Notes
Applicability (feasibility)		

Political Acceptability or Leverage	• Will the intervention be allowed or supported in current political climate?	• Yes
		  – especially as precursor for e-documentation
		  – common issue externally
		  - need to be supported politically difficult to do as a result of cost
		  - I think the recommendations will be supported. In our division (FH), staff have been asking documentation questions and looking for guidelines in the past few years. The HBHC program has been working on their CBE standards and there is a lot of interest in them and whether they will be applicable to other programs. There may be some anxiety or resistance to the implementation of CPWs or structured documentation from staff unfamiliar with using them. I think most would welcome an electronic medical record
		  - Documentation of decisions specific request by MOH for all divisions
		  - Changing nursing documentation will involve change management process for up to 350 staff
		  - Yes, however, Mandate of Ministry of Children and Youth is competing
		  - Yes, the MOH will be supportive of a more efficient and effective nursing documentation system that will mitigate risk to the client, nurse and organization

Factors	Questions	Notes

	• What will the public relations impact be for local government?	• Minimal or no impact
		  - I don't anticipate any public relations impact for local government. There could be some client dissatisfaction with length of time needed for completion of assessments, etc. in the beginning when EMRs are brand new and staff are just learning the system
		  - The public relations impact for PPH will be minimal

	• Will this program enhance the stature of the organization?
	   • *For example, are there reasons to do the program that relate to increasing the profile and/or creative a positive image of public health?*
		• Mixed feedback
		  - Yes - this rapid review / project will identify Peel as a leader in documentation among Ontario public health units
		  - Change in management process for 350+ staff
		  - No
		  - Indirectly it could enhance the positive image of PPH if records are subpoenaed or clients request to view them and it becomes apparent that they are consistent, professional, timely, concise, fulfill any legal requirements, etc.
		  - Completing and sharing the results of the rapid review during conferences and workshops and sharing findings with other health units will increase the profile and positive image of PPH

	• Will the public and target groups accept and support the intervention in its current format?	• Mixed feedback
		  - PHNs support addressing documentation as a whole; time to document a concern
		  - No, if they knew it was so inconsistent and varied
		  - Yes, I think PHN staff will support the recommendations as stated
		  - Nurses will accept the intervention if

Factors	Questions	Notes
		- presented well - Nurses have expressed support for a more standardized and consistent documentation system and therefore it is anticipated that they will support recommendations that will improve their practice - Clients will be supportive of the intervention, especially more legible and easily understood client files, if requested
Social Acceptability	• Will the target population find the intervention socially acceptable? Is it ethical?	• Positive feedback with some concerns - Concerns have been raised re: 7 hours (policy), not regarding CPW/careplans - Socially acceptable & ethical - May be concerns regarding lost data if documenting on computer - Yes – ethical – aim is to protect the client, nurse, and the organization - Need to find documentation approach which fits with RNAO requirements, MOHLTC needs and potential transfer of some records to EMR - Change in documentation may change workflow and work day of nurses, especially if currently spending a long time on it - Nurses will find the intervention(s) ethical, leading to improved client outcomes and adherence to standards, guidelines, and legislation
	• *Consider how the program would be perceived by the population.*	• Mixed reactions / feedback - They (nurses) would perceive it from their own perspective – how do we define the recommendations (e.g., CPW) at Peel and each section , division, subject area is different and unique

Factors	Questions	Notes
		- I believe PHNs will perceive it as helpful and as a step in the right direction that it is overarching for **all** nurses in PPH; Many of us have felt frustrated by the number of different documentation systems even within our divisions - The intervention(s) will be perceived by nurses to be more time consuming during the training and implementation phases but more efficient in the long term
	• *Consider the language and tone of the key messages.*	• Suggestions provided re: language and tone - The recommendations use a strong tone but when examined with the context and anecdote it makes sense - Streamlining documentation is important - Language must be supportive of nursing using their professional judgment - Language and tone must be collaborative and demonstrate trust and partnership – if punitive, staff will not be motivated - The language and tone of the key messages will be supportive and positive to assist adoption of the changes
	• *Consider any assumptions you might have made about the population. Are they supported by the literature?*	• That charting is not done consistently (is an assumption) and everyone is not following the same format, using the same tools, etc.
	• *Consider the impact of your program and key messages on non-target groups.*	• Variety of feedback - Other health professionals may be looking for overarching guidelines as well. We have developed draft documentation guidelines for nursing documentation in Family Health and there was interest from the registered dietitians to be included in the guidelines - The literature supports assumptions that

Factors	Questions	Notes
		- nurses will adopt the intervention(s) but an extended period of time for adoption is expected - Other health units have expressed the same results on uptake that demonstrates variation among staff interventions and key messages will have an impact on non-target groups including admin support staff - They will also require training and adjustment period to adapt to the changes in nursing documentation as both disciplines document in client files
Available Essential Resources (personnel and financial)	• Who/what is available/essential for the local implementation?	• Feedback received regarding current structures - Documentation committees - Nursing Professional Practice Reference Group - ARP Professional Practice - Chief Nursing Officer - Documentation Initiative Supervisor - Nursing Professional Practice Senior Advisory Committee - Some divisions may already have guidelines or draft guidelines which could be revised to align with policies and procedures and recommendations - ARPS can create policies, procedures, and guidelines - The Chief Nursing Officer and the Communicable Diseases Investigations, Healthy Sexuality and Healthy Babies Healthy Children programs could investigate the feasibility of CPWs for their respective programs
	• Are they adequately trained? If not, is training available and affordable?	• Mixed feedback, based on typed of system to be introduced

Factors	Questions	Notes
		- Training to adopt CPWs or structured documentation would probably not be costly – could be peer-to-peer or in groups led by already-trained champions - Training to move to an EMR is likely much more costly and lengthy and would likely involve at least some training from the vendor - Training for new documentation practices will involve large # of staff so will be time and resource heavy - Adequate space and training will be essential for implementation - Training is available and affordable through the CNO Documentation Initiative structure - Tools and training materials will need to be developed by the Documentation Committee ARPs
	• What is needed to tailor the intervention locally?	• Program specific tailoring - Tailoring should be based on program - Defining CPW for those who don't have it; defining what a CPW looks like at Peel (which would include each division, section, etc) - If move to CPWs and structured documentation will need to develop new P&Ps - Must tailor the intervention at each program level - The intervention(s) will be tailored to meet the needs of each program due to the diversity of program work
	• What are the full costs? • *Consider: in-kind staffing, supplies, systems, space requirements for staff,*	• Feedback received regarding potential costs - Training is time/resource intensive - Time and resources; staff and time, training

Factors	Questions	Notes
	training, and technology/administrative supports.	if needed (will look different for each division, program areas) - Creating clinical pathways and structured documentation is time consuming and time is money - Setting up structure and pathways in HBHC - 1 FTE since June 2012, approx 2 years so far - In HBHC approx 1700 clients/year - Liability, risk management - No info on costs to implement EMR, but would potentially include: hardware, software, training, hard copy "in-your-hand" resources, initially on-site technical support, staff down-time while in training and during adaptation to a new system

	• Are the incremental health benefits worth the costs of the intervention?
	   • *Consider any available cost-benefit analyses that could help gauge the health benefits of the intervention.*
	   • *Consider the cost of the program relative to the number of people that benefit/receive the intervention.*
		• Variety of feedback regarding costs, benefits, and risks
		- Decrease risk with high potential cost
		- Yes, rapid review has found that the CPW and structured intervention has a positive effect on patient, nurse, organization (mixed for computer)
		- Benefits (although not 'health' benefits) include: reduced risk to clients, PHNS and the Region, consistency in documentation, 'one client/one record' principle as per College of Nurses of Ontario, multiple programs contributing to one client record would contribute to better communication re: the client and therefore better nursing care for the client.
		- EMR is a larger and more expensive project and may not make documentation faster – however, might be easier for running a report and program quality assurance
		- From a quality care and risk management

Factors	Questions	Notes
		perspective it is a worthwhile intervention - Costs: The cost of acquiring an EMR suitable for PPH programs (clinics) and the associated IT costs are unknown - There may be printing cost for updated paper forms, protocols and guidelines until EMR is in place - Training rooms will be scheduled (no cost) and materials will be printed on site and supplied for training purposes - Staff will receive training in increments avoiding the need for hiring additional staff - The health benefits are worth the costs; client, nurse, and organizational outcomes will potentially improve using a structured system (care plan) or CPW
Organizational Expertise and Capacity	• Is the intervention to be offered in line with Peel Public Health's 10-Year Strategic Plan (i.e., 2009-2019, 'Staying Ahead of the Curve')?	• Yes – in line with Strategic Plan - Will possibly improve infrastructure - It is in line with making evidence informed decisions because these recommendations were a result of a rapid review and reviewing the best available evidence - It could also impact performance management as the recommendations are adapted and implemented - The infrastructure priorities that align include: Developing our Workforce through the evaluation of nursing documentation and the development of a nursing documentation system to enhance effective nursing practice; Making evidence-informed decisions through a rapid review on nursing documentation; Measuring Performance through the implementation of an effective and efficient documentation system - 'Workforce Development' - specifically

Factors	Questions	Notes
		having the necessary competencies to be effective in the position, and maintaining and enhancing skills through professional development - Measuring Performance - (effectiveness of programs) - Enhancing Communication
	• Does the intervention conform to existing legislation or regulations (either local or provincial)?	• Yes - College of Nurses of Ontario Standards guidelines - Yes – P&P and any new documentation systems will need to comply with PHIPA, MFIPPA, follow College of Nurses of Ontario Documentation Standard, Health Care Consent Act, etc. - Aligns with existing Regional and College of Nurses legislation - The intervention(s) conform to existing legislation and regulations, e.g., CNO and OPHS
	• Does the intervention overlap with existing programs or is it symbiotic (i.e., both internally and externally)?	• Mixed feedback - Each section and Division is doing something different (streamlining charting, using forms, etc) but there is overlap and this info can be obtained through the work of the documentation committees - No - Recommendations overlap with work on documentation already started in some divisions - Changing documentation for nurses would affect 3 divisions - Need structured decision making and change management approach
	• Does the intervention lend itself to cross-departmental/divisional collaboration?	• Yes - We have CD & FH that provide direct client

Factors	Questions	Notes
		services and also CD, FH, CDIP, that provide services through health promotion, etc - Yes - Recommendations could lend themselves to collaboration across divisions – some are further ahead than others re: documentation and could share expertise and learning with other divisions. - Yes, there could be cross-program collaboration at a purpose level - The intervention(s) overlaps with existing programs and lends itself to cross-divisional collaboration e.g., structured documentation. - The three divisions are supportive of changes and share information willingly - PHMT has approved and the MOH has signed the Vision and Philosophy and PHMT has endorsed the P&P, documents that support the intervention(s)
	• Any organizational barriers/structural issues or approval processes to be addressed?	• Several barriers identified - Multiple program needs - Because of varying practices, it will take time to get everyone on the same page - Many conflicting priorities - Barriers to EMR include that there are already some electronic systems in place that don't communicate with each other: ISCIS for HBHC, which is Ministry mandated, TTED for contact centres, pilot for Lagan, etc. - Likely several years to implement if have new CPWs, structured documentation and EMR - Barriers include nurse buy-in, fears related to court cases, reducing amount and content of documentation and changes in long

Factors	Questions	Notes
		standing practice, IT support for EMR
	• Is the organization motivated (learning organization)? o *Consider organizational capacity/readiness and internal supports for staff learning.*	• Mixed feelings shared - Yes – motivated - Yes and no (with time and more communication). As nurses have been hearing more about the documentation initiatives, they understand that there is a need for change (derived from nursing forums). However, there seems to be a reluctance from nurses to change their practice (ie charting less) - I think that there is a culture of learning in place which would support the changes - Not sure where this fits on list of priorities - CNO Mandate around documentation - PPH is a learning organization that supports ongoing learning and improvements. Readiness for staff learning has begun with participation in Nursing Forums and positive comments from front line nurses on the need and desire for change and consistency. Internal support for staff learning had been offered by the Education and Research Department