Table 1 [R1, R2, R3, R4] Reference table: Intervention ①-④

	Intervention	Outcome	Evaluation
R1	①Providing knowledge about disease ☐ Providing introductory teaching materials ☐Knowledge test	○Being able to explain one's disease and renal failure using one's own words.	Assessment of knowledge, using methods, such as direct observation, oral statement, and interviews or check-list
R2	②Providing knowledge of self-management ☐ Talking about the process with the patient using self management diary (pocketbook). ☐ Looking back his/her daily behavior and confirming the meaning of behavior.	○Being able to explain one's desirable weight gain, one's dry weight, bowel movement control and diet idea for weight control	Assessment of knowledge, using methods, such as direct observation, oral statement, and interviews or check-list
R3	③Clarifying the meaning of life ☐ Confirming the process of pain ☐ Confirming what is important in one's life ☐ Focusing on a patient's feeling and talking sympathetically.	○Being able to explain the meaning of one's life and what is important.	Observation, interview · Verbal and nonverbal response from the patient · Attitude, response, expression
R4	④Definition of problem ☐ The nurse asks the patient what he/she wants to change. ☐ The nurse asks the patient about his/her problems. ☐ The nurse doesn't present the patient with his/her problem ☐ The nurse doesn't adopt a way of talking which corners the patient	○Being able to explain one's disease and renal failure using one's own words	Observation, interview · Verbal and nonverbal response from patient · Attitude, response, expression

Table 2 [CL 1] Candidate logic table: intervention program ⑤Choosing of technique

	Intervention	Outcome	Evaluation
CL 1	Attention in BMP ☐ A nurse reconfirms whether the information collected about a patient's problem and assessment are suitable. ☐ The nurse respects the patient's self-determination. ☐ The person making the intervention should be familiar with interviewing ☐ It reconfirms whether the target of the goal of behavior modification and medical treatment are appropriate.	○ The patient can choose the technique of BMP by oneself	Observation, interview · verbal and nonverbal response from patient · Attitude, response, expression

Table3 [R5, R6, R7] Reference table: Procedure and points requiring attention

Technique	Procedure	Points requiring attention
R5 Self-monitoring	1. The self-monitoring table is handed to the patient	(1) The self-monitoring table consists of goals, monitoring items, space for patient's free-description, space for feedback description such as nurses' comments, and the name of the nurse in charge.
	2. The self-monitoring items are decided by the nurse and patient together	(1) Whether concrete attainment goals and behavioral goals have been set is confirmed (2) The self-monitoring items are decided from the physical, behavioral, cognitive, and emotional aspects or in terms of merits and demerits (3) The self-monitoring items should be measurable.
	3. On the day of hemodialysis, the nurse and the patient perform assessment of SM together, and the nurse gives feedback to the patient.	(1) The purpose of the self-monitoring is not that patients write description in the table but that they become aware of changes in their own behavior, physical condition, and feeling. Therefore, when there are blanks in the table, evaluation is performed while the nurse writes instead of the patient. (2) Attention is paid to privacy, and the environment is adjusted to facilitate talking. (3) When the attainment of the goals is difficult, the goals and SM items are evaluated and changed.
R6 Step-by-step	1. Collecting data to decide the patient's goal.	(1) The nurse collects information about the patient's lifestyle and environment to assess whether the patient can participate.
	2. The goal and practicable small steps are decided by the nurse and patient together.	(1) The goal and evaluation day are decided (2) The small steps are possible and concrete. (3) In step-by-step, the goal should not be too high in order not to discourage self-efficacy. (4) The evaluation day of the small steps are decided. (5) The evaluation day is set according to the patient's pace.
	3. To execute the program step-by-step	(1) Assessment of the patient's self-efficacy. (2) The small steps are changed when the goal is impossible. (3) When the first step is not achieved, next step is decided carefully.
R7 Reinforcement	1. The goal is decided	(1) The goal and behavioral objective are decided concretely. (2) To feedback (3) The evaluation day is decided.
	2. A positive and negative reinforcers are decided by the nurse and the patient	(1) A positive reinforcer is better than a negative one because it's encouraging. (2) Reinforcer is given by others (3) Reinforcer is visualized. (4) Reinforcer can be used often when the goal is achieved.

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Structured Visualization of Expert Nursing
– An educational program for stoma self-care –

Chizuko Konya[a], Hiromi Sanada[b], Satoko Tsuru[c]

[a] *School of Health Sciences, Kanazawa University, Kanazawa, Japan*
[b] *School of Nursing, The University of Tokyo, Tokyo, Japan*
[c] *School of Engineering, The University of Tokyo, Tokyo, Japan*

Opening summary

To provide an adequate educational program for patients with a stoma, we have developed an algorithm which this algorithm was divided into three parts according to the period, i.e., the preoperative period, postoperative period, and rehabilitation period. It was composed of action nodes, thinking nodes, choice branches, assessment item tables, reference tables, and candidate logic tables. Wound Ostomy Continence Nurses (WOCNs) used this algorithm. The results indicated that the algorithm did not omit any important points involved in stoma care, and that it could therefore be successfully applied to patients with a stoma.

Keywords: stoma, self-care, educational program

Purpose

Since the changes brought about by stoma surgery require that patients re-learn self-care skills, it is very difficult for the patients to cope with this situation. Therefore nurses have to provide about professional knowledges and experience techniques. To guarantee the quality of stoma care, we developed for the nurses an algorithm to help achieve this purpose. WOCNs, who are nurses specializing in stoma care, used this algorithm and provided feedback regarding its utility.

Methods

The program for stoma self-care was established based on information obtained from both literature and web searches, as well as by questioning clinical nurses. We developed an algorithm according to the notational system of Tsuru et al.[1-2] This algorithm was confirmed based on feedback from WOCNs regarding its clinical application.

Results

The beginning point of the algorithm was assumed to be the preoperative period, because stoma care (e.g., stoma site marking) was begun during the preoperative period. The details of stoma care changed greatly according to the period e.g., care of the skin around the stoma and psychological support in the postoperative period and the confirmation of sufficient stoma self-care during the rehabilitation period. As a

result, the algorithm was consisted of three periods, namely the preoperative period, the postoperative period, and the rehabilitation period. This algorithm was composed of 16 action nodes, 10 thinking nodes, 12 choice branches, 9 assessment item tables, 9 reference tables, and 6 candidate logic tables. Five WOCNs reported that this algorithm did not omit any important points involved in stoma care, while it was also easily applicable to the patients.

Discussion

The expert nursing associated with stoma self-care involves structured visualization, and this algorithm allows nurses at hospitals, where there are no WOCNs, to perform appropriate specialized care. The evaluation finding of the WOCNs suggested that this algorithm can facilitate the performance of appropriate structure visualization in the learning process of stoma self-care. A future direction of this study will be to develop a computer program for this algorithm and to also verify its validity, including its cost-effectiveness.

Reference

1) Tsuru S., Nakanishi M., Watanabe C. et al. 2005. Development of Programmed Care based on structural Visualization of Expert Nursing. Japanese Journal of Nursing Administration, Vol.17 (7) pp.555-561 (Japanese)

2) Tsuru S. et al 2004. Standardization of Nursing Practice Terminology for Electric Health Record system in Health Care and Welfare service in Japan. Research report in grant from Japan Ministry of Health, labor and Welfare, total 698 pages (Japanese).

Address for correspondence
Chizuko Konya: School of Health Sciences, Kanazawa University
5-11-80 Kodatsuno, Kanazawa, Japan, 920-0942
Tel : +81-76-265-2566
Fax: +81-76-234-1363
E-mail : konya@mhs.mp.kanazawa-u.ac.jp

「高度専門看護実践の構造的可視化　－ストーマ自己管理教育プログラム－」

サマリー

ストーマの自己管理に向けての教育プログラムを作成するために、ケア要素を抽出し、アルゴリズムを作成した。このアルゴリズムは、術前、術後、社会復帰後の3つのサブユニットと、行為ノード、判断ノード、判断分岐、アセスメント項目テーブル、参照テーブル、ロジック参照テーブルで構成された。このアルゴリズムを WOCN からヒヤリングをした結果は、不足しているケア要素はなく、患者に適応可能であった。

1．Purpose

ストーマ造設という腹壁に排泄経路を変更する患者の新たな排泄の自立に向けての教育には、専門的な看護実践が要求される。そこで、ストーマケアの質を保証するために、ストーマの自己管理に向けての看護実践のケア要素を抽出し、その看護ケアを構造的に可視化することでアルゴリズムを作成しヒヤリングを行なったので報告する。

2．Method

ストーマの自己管理に関するケア要素を文献と web からの検索と、臨床ナースからヒヤリングを行い抽出した。そして、水流らの表記法に従って構造化し、アルゴリズムを作成した。さらに、作成したアルゴリズムは、WOCN から臨床適応をヒヤリングし検証した。

3．Result

アルゴリズムの開始時点は、ストーマ造設前よりストーマ造設部位の決定などのケア要素が抽出されたことから術前とした。そして、手術後にはストーマケアの獲得やボディイメージの障害に対するケア、退院後にはセルフケアの継続の確認など、時期によって大きくケア内容が変更していた。そのため、術前、術後、社会復帰後の3つのサブユニットでアルゴリズムを構成した。このアルゴリズムは、行為ノード 16、判断ノード 10、判断分岐 12、アセスメント項目テーブル 9、参照テーブル 9、ロジック参照テーブル 6 から構成された。5 名の WOCN からヒヤリングをした結果は、不足しているケア要素はなく、患者に適応可能であったと評価を得た。

4．Discussion

ストーマ自己管理に向けての高度専門看護実践を構造的に可視化することで、WOCN の勤務しない病院であっても安定した高度な看護ケアの提供が可能となるため、本研究の成果は有用である。今回、ストーマケアを専門とするナースからのアルゴリズムの評価から、ストーマケアの自己管理に向けてのケアが可視化できているといえる。

今後は、コンピューター上でのシステム化とアルゴリズムの費用対効果を含めた妥当性を検証する必要がある。

Structured Visualization of Expert Nursing – An educational program for stoma self-care –

Chizuko Konya[a], Hiromi Sanada[b], Satoko Tsuru[c]

a *School of Health Sciences, Kanazawa University, Kanazawa, Japan*
b *School of Nursing, The University of Tokyo, Tokyo, Japan*
c *School of Engineering, The University of Tokyo, Tokyo, Japan*

Stoma Care

Since the changes brought about by stoma surgery require that patients re-learn self-care skills for the passage, it is very difficult for the patients to cope with this situation.
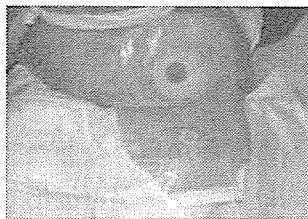
Self-Care

1. Stoma appliances used
2. Skin care
3. Changing a stoma appliance   etc.

Therefore nurses have to provide about professional knowledges and experience techniques.

Purpose

To guarantee the quality of stoma care, we developed for the nurses an algorithm to help achieve this purpose.

Wound Ostomy Continence Nurses (WOCNs), who are nurses specializing in stoma care, used this algorithm and provided feedback regarding its utility.

Methods

1. The program for stoma self-care was established based on information obtained from both literature and web searches, as well as by interviewing clinical nurses. We developed an algorithm according to the notational system of Tsuru.

2. This algorithm was confirmed from WOCNs regarding its clinical application.

Result 1 (Figure 1)

This algorithm was consisted of three periods, namely the preoperative period, the postoperative period, and the rehabilitation period.

This algorithm was composed of 16 action nodes, 10 thinking nodes, 12 choice nodes, 9 assessment item tables, 9 reference tables, and 6 candidate logic tables.
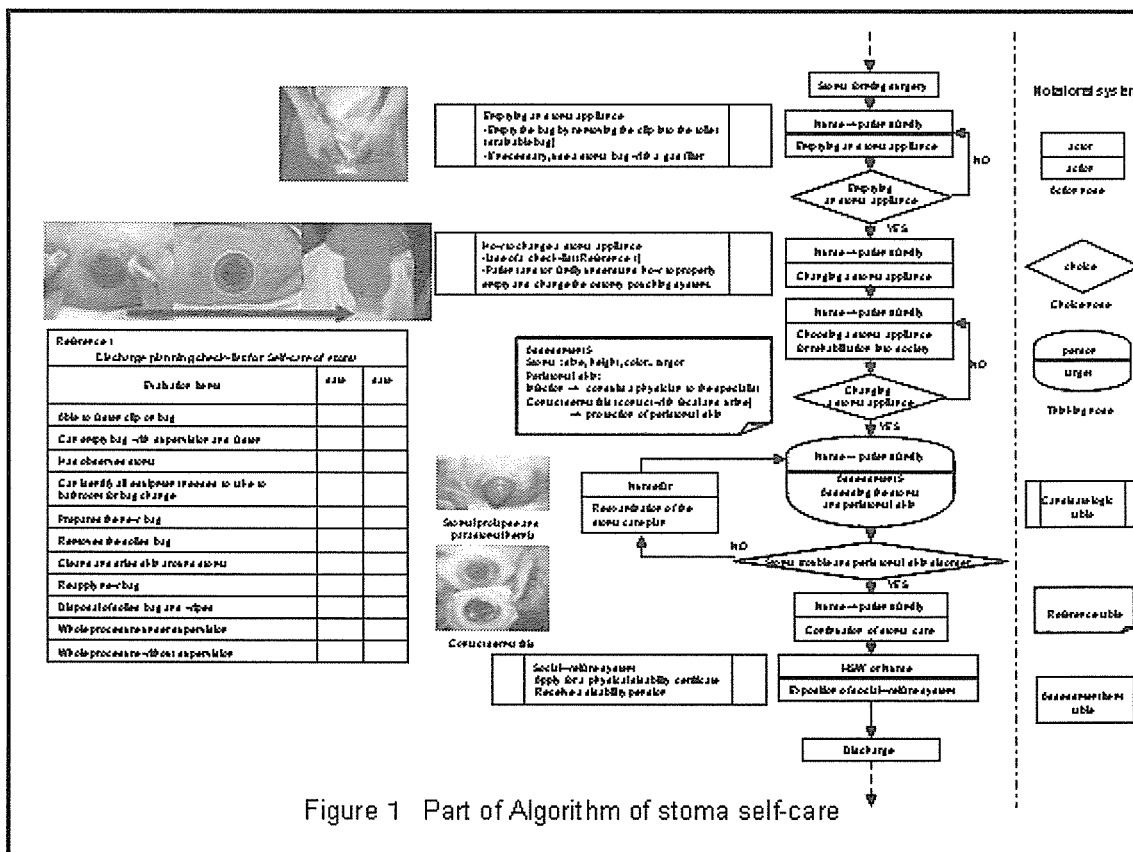
Figure 1　Part of Algorithm of stoma self-care

Result 2

Five WOCNs reported that this algorithm did not omit any important points involved in standard stoma care, while it was also easily applicable to the patients.

Opinions of WOCNs : Addition of specialized caring items
  Preoperative
  - Care at emergency surgery
  Postoperative
  - The management and care of people with stoma complications
  - Choosing the accessories used in stoma care
  - Irrigating a colostomy
  Rehabilitation
  - Consider the self-care abilities in the elderly ostomate

Discussion

1. The expert nursing associated with stoma self-care involves structured visualization, and this algorithm allows nurses at hospitals, where there are no WOCNs, to perform appropriate standard care.

2. The evaluation finding of the WOCNs suggested that this algorithm can facilitate the performance of appropriate structure visualization in the educational process of stoma self-care.

3. A future direction of this study will be to develop a computer program for this algorithm and to also verify its validity, including its cost-effectiveness.

Summary

1. To provide an adequate educational program for patients with a stoma, we have developed an algorithm which this algorithm was divided into three parts according to the period.

2. According to the feedback from the WOCNs, this algorithm could be successfully applied to patients with a stoma.

Structured Visualization of Expert Nursing: Prevention of pressure ulcers

Atsuko Kitagawa[a], Hiromi Sanada[a], Chizuko Konya[b], Junko Sugama[b],
Mayumi Okuwa[b], Satoko Tsuru[a]

[a] *The University of Tokyo, Tokyo, Japan,* [b] *Kanazawa University, Kanazawa, Japan*

Opening Summary

We made an algorithm by extracting the caring elements for the patients to develop program for pressure ulcer prevention. The algorithm consisted of observation of the patient skin as a beginning point, extraction of the risk factors for pressure ulcer development, intervention to each risk factor, and evaluation. The expert panel identified this algorithm as adequate enough to adapt to the patients.

Key words: pressure ulcer prevention, algorithm

Introductions

In recent years, there's been trend of aging patients, progress of high medical technology and decrease of hospital stay, which made nurses required advanced nursing technique. The pressure ulcer incidence has come to be used to evaluate the quality of nursing quality. Especially, pressure ulcer care has been what only the expert could do. Algorithm of the expert nursing practice would make all general nurses provide it to all the patients, resulting in improvement of quality of medical services. The purpose of this study was systematization of expert nursing technique for pressure ulcer prevention.

Methods

1) Development of care standard linked to this algorithm: (1) the literature review and web searching based on EBM&N method, information collection from previous guidelines, and information collection from expert opinion. (2) The researchers developed Standard Care for Pressure Ulcer Prevention (SCPUP)

2) Establishment of internal validity of SCPUP. (1)Four nurses evaluated SCPUP. (2) Nine expert panels reevaluated SCPUP. (3) Development of the completed version of algorithm.

3) Indication of this algorithm. This algorithm was adaptable to all hospitalized patients. The start points of this algorithm were when the patients admitted the hospital, or the patents became bedridden or chair bound. The end points were when the patients discharged or died.

Result

We set starting point of this algorithm when nurses observed the patient skin on admission. Furthermore, another starting point was set when the patients became bedridden or chair-bound in hospital having high risk factor for pressure ulcer. As a result, despite patient's state, the general nurses are constantly able to practice screening. In addition, the skin assessment tool consisting of guidance for the specific vulnerable pressure points and skin signs was developed so that general nurses could easily observe the skin integrity. In the case of no pressure ulcer the nurses observed, nurses assessed individual risk for developing pressure ulcer using an existing risk assessment scale and intervened in each identified risk factor. Nurses evaluated the intervention, and judged the necessity for the re-intervention along the algorithm.

Conclusion

This algorithm can serve as an educational tool by which general nurses learn the advanced expert interventions through utilization of their own knowledge and technique, as well as a contributor for the highly standardization of nursing care. We considered these points would improve the quality of nursing.

Challenges for the future. Risk factors for pressure ulcer development always simultaneously present, and thus nurses intervene in each risk factor simultaneously; however, the present system cannot provide multiple nursing cares in parallel. From the clinical view point, the reliability of this algorithm should be verified. This system would be used continuously by providing the same function in the case of alteration of recuperation environment such as hospital changing or discharging.

Address for correspondence to
Atsuko Kitagawa, MSN, RN
Graduate School of Medicine and Faculty of Medicine, University of Tokyo
Tokyo University Faculty of Medicine Bldg. No.3
7-3-1 Hongo, Bunkyo-ku, Tokyo, 113-0033, JAPAN
E-mail: akbea-tky@umin.ac.jp

# Structured Visualization of Expert Nursing: Prevention of pressure ulcer

Atsuko Kitagawa PhD, RN[1], Hiromi Sanada, PhD, RN, WOCN[1]; Chizuko Konya, PhD, RN, WOCN[2]; Junko Sugama PhD, RN[2]; Mayumi Okuwa MSN, RN[2], Satoko Tsuru, PhD, RN[1]

The University of Tokyo, Tokyo, Japan [1]; Kanazawa University, Kanazawa, Japan [2]

サマリー

　褥瘡予防プログラムを作成するために、ケア要素を抽出し、アルゴリズムを作成した。このアルゴリズムは、患者のスキンチェックを開始点とし、褥瘡発生危険要因の抽出、各危険要因への介入、評価で構成された。このアルゴリズムは専門家パネルへのヒアリングから、不足しているケア要素はなく、患者に適応可能であった。

1．目的　Purpose

　近年、患者の高齢化、高度な医療技術の進歩、在院日数の短縮化に伴い、看護師には高度な看護技術が求められている。その質を評価する手段として、褥瘡発生率が用いられるようになってきた。特に褥瘡ケアは、従来エキスパートしかできなかったケアであり、これをアルゴリズム化することで、全ての一般看護師に提供でき、これが医療全体の質向上につながると考えられる。本研究の目的は、褥瘡予防の看護技術をシステム化することである。

2．方法 Method

【ケアの抽出方法】1）アルゴリズムに連動するケア基準の作成：EBM&N の手法をもとにした文献検索、ガイドラインからの情報収集、エキスパートオピニオンからの情報収集の3側面から得られた看護ケアのエビデンスを基に、研究者がケア基準を作成した。2）ケア計画の内的妥当性の確保：褥瘡ケアを行う看護師4名によるケア計画候補の評価の後、さらに専門家パネル9名による再評価を行い、完成版を作成した。

アルゴリズムを使用する対象者は全患者で、開始点は入院時、寝たきりあるいは座りきりになった時点、終了点は退院または死亡とした。

3．結果 Result

　全患者の入院時のスキンチェックをアルゴリズムの開始点とした。また入院中の患者においても、褥瘡発生リスクが高まる寝たきりあるいは座りきりとなった時点も開始点とし、いかなる患者の状態からもスクリーニングできるように設定した。さらに一般看護師が容易にスキンチェックできるように部位と皮膚状態のアセスメント項目テーブルを設定した。スキンチェック後、褥瘡発生無と判断された場合は、既存のリスクアセスメントスケールを用い、褥瘡発生危険因子を抽出し、さらに抽出された危険因子への介入へと連動させた。そして行った介入を評価し、再介入の必要性の有無を判断するように構成した。

4．考察 Discussion

　今回作成した褥瘡予防アルゴリズムは、エキスパートの視点や介入方法を中心にお

きながらも、一般看護師が通常使用しているアセスメントスケールを取り入れ、使用しやすくしたものである。これは、高度なケアの標準化のみならず、一般看護師がこれまでの知識や技術を活かしながら、さらにエキスパート独自の高度な介入方法を学習できるという教育ツールとしても使用できる。このことが、看護の質を向上させるのではないかと考える。課題は、ソフト面では、褥瘡ケアの特徴として、危険因子が同時に存在し、同時に介入する必要があるが、現在のシステムではケアの並列化ができないため今後、この点を改善していく必要がある。臨床面では、アルゴリズムの信頼性の検証を行うこと、展望として、転院や在宅看護など、療養環境が変更後も同様なシステムしていれば継続使用可能であると考えられる。

Structured Visualization of Expert Nursing: Prevention of Pressure Ulcers

Atsuko Kitagawa, PHD, RN[1], Hiromi Sanada, PHD, RN, WOCN[1]; Chizuko Konya, PHD, RN, WOCN[2]; Junko Sugama, PHD, RN[2]; Mayumi Okuwa, MSN, RN[2], Satoko Tsuru, PHD, RN[1]

1 The University of Tokyo, Tokyo, Japan
2 Kanazawa University, Kanazawa, Japan

Opening Summary

We made an algorithm by extracting the caring elements for the patients with pressure ulcers in order to develop program for pressure ulcer prevention. The algorithm consisted of observations of the patient skin as a beginning point, extraction of the risk factors for pressure ulcer development, the type of intervention for each risk factor, and the evaluation. The expert panel identified this algorithm as being sufficient program for pressure ulcer prevention.
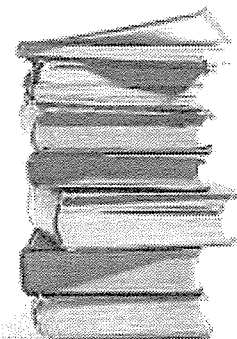
DEVELOPMENT OF PROGRAM FOR PRESSURE ULCER PREVENTION

❑ DEFINITION OF A PRESSURE ULCER

Pressure ulcers are caused by prolonged pressure and typically occur over bony prominences in bed- or chair-bound individuals. Wound characteristics can be used to distinguish pressure ulcers from other types of chronic wounds. (NPUAP,2000)

In recent years, there has been a tendency for elderly patients to have a decreased hospital stay due to advances in medicine which require advanced nursing. The incidence of pressure ulcers has also been used to evaluate the quality of nursing care. Especially, up to now pressure ulcer care trend to only be performed by experts. An algorithm for expert nursing practice is thus expected to result in all general nurses sufficient pressure ulcer care to all patients, thus resulting in an improvement in the quality of medical services.
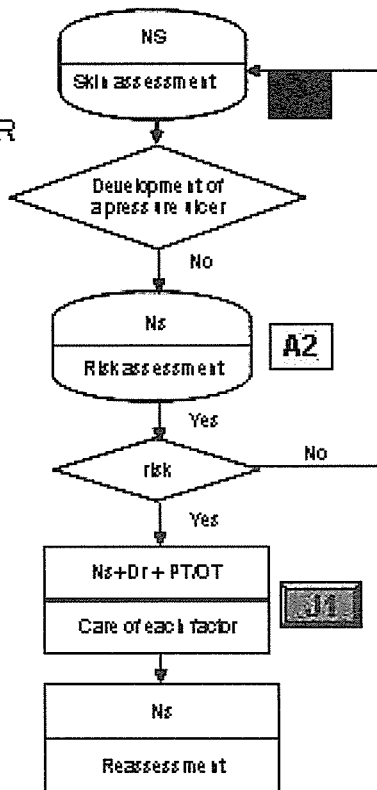
The purpose of this study was the systematization of expert nursing technique for pressure ulcer prevention.

METHODS

I Development of care standard linked to this algorithm:
  1. The literature review and web searching based on EBM&N method, information collection from previous guidelines, and information collection from expert opinion.
  2. The researchers developed a Standard Care Regimen for Pressure Ulcer Prevention (SCPUP).

II Establishment of internal validity of SCPUP:
  1. Four nurses were evaluated for SCPUP.
  2. Nine expert panels reevaluated SCPUP.
  3. A final version of the algorithm were developed.

III Indication of this algorithm:
  This algorithm was adapted to all hospitalized patients.
  The starting point of this algorithm was when the patients was admitted to the hospital, the patients were bedridden or chair-bound.
  The end points was when the patients discharged or died.
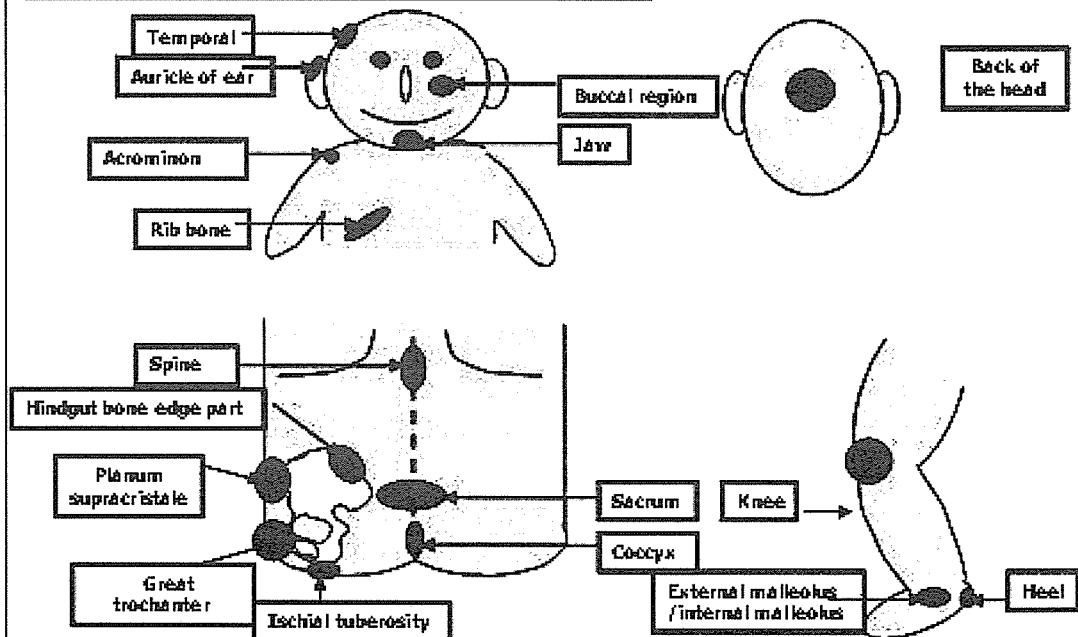
RESULTS:

PREVENTION OF PRESSURE ULCER ALGORITHM

NS
Skin assessment

Development of a pressure ulcer

No

Ns
Risk assessment   A2

Yes

risk   No

Yes

Ns+Dr + PT/OT
Care of each factor

Ns
Reassessment

A2 Assessment Item table

- Government proposed tool
- Braden Scale
- K Scale

*Nurses can choose to one of the three risk assessment scales

---

Skin Check Region

ASSESSMENT ITEM TABLE : A1

Temporal
Auricle of ear

Buccal region

Jaw

Back of the head

Acrominon

Rib bone

Spine

Hindgut bone edge part

Planum supracristale

Sacrum   Knee

Coccyx

Great trochanter

Ischial tuberosity
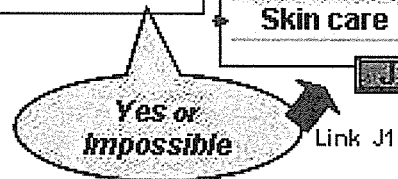
External malleolus /internal malleolus   Heel

A2-1 ASSESSMENT ITEM TABLE : A2-1

GOVERNMENT PROPOSED TOOL

Degree of independence J (1,2) A (1,2) B(1,2) C (1,2)		*Nursing care program*
· Mobility (in Bed) (in Chair)	○ Possible ○ Impossible ○ Possible ○ Impossible	Pressure relief
· Extreme bony prominence	○No ○Yes	Skin care
· Articular contracture	○No ○Yes	Nutrition
· Malnutrition	○No ○Yes	Skin care
· Moisture	○No ○Yes	Skin care
· Edema	○No ○Yes	

Yes or Impossible → J1   Link J1

A2-2 ASSESSMENT ITEM TABLE : A2-2

BRADEN SCALE

Sensory perception	1 Completely Limited	2 Very Limited	3 Slightly Limited	4 No Impairment	score
Moisture	1 Constantly Moist	2 Very Moist	3 Occasionally Moist	4 Rarely Moist	
Activity	1 Bedfast	2 Chairfast	3 Walks Occasionally	4 Walks Frequently	
Mobility	1 Completely Immobile	2 Very Limited	3 Slightly Limited	4 No Limitation	
Nutrition	1 Very Poor	2 Probably Inadequate	3 Adequate	4 Excellent	
Friction and Shear	1 Problem	2 Potential Problem	3 No Apparent Problem		

Pressure relief
 Skin care
 Nutrition

The item which needs care intervention   Link J1 → J1

Total Score

A2-3 THE K SCALE (KANAZAWA UNIVERSITY PRESSURE ULCER PREDICTIVE SCALE)

Version 8-3

Check the box if the following factor(s) is present.
Note: 1 check equals 1 point

sub-total (a+b+c)
A

Underlying Risk Factors

[ ] a   [ ] b   [ ] c

Immobility	EPB	Malnutrition

Patients:
-cannot self-position themselves
-have dementia
-unwilling to change position
	Patients have:
	(1) Sacrum interface pressure ≧40mmHg
	  or
	(2) The following is observed:
	  •Bony prominence (at the sacrum, coccyx, ischium, trochanter, ilium
	  •Contracture (upper/lower limb)
	  •Hump back
		(1) Alb <3.0g/dl or TP <6.0g/dl
		  or
		(2) Degree of ilium ≦40mm
		  or
		(3) Any of the following is observed:
		  •Edema
		  •Anemia
		  •Calorie insufficiency
		  •Cannot/will not feed oneself

Trigger Factors

sub-total (d+e+f)
B

| Pressure | [ ] d | • Body is in same position for long periods of time (decreases blood pressure to <80mmHg, pain etc. |
| Moisture | [ ] e | •Onset of urinary/fecal incontinence Increased perspiration due to fever (body temperature ≧38.0℃, etc.) |
| Shear | [ ] f | •Increased friction and shear by an improved ADL (Activity of Daily Living) |

Total Score   A+B

If the Patient answers 'Yes' item, Nurses have to link J1 and care for risk factors

Link J1
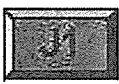
EACH CARE FACTOR AND THE DETAILS OF THE CARE

Pressure relief

● **Risk factors**

Risk assessment
○ Mobility
○ Extreme bony prominence

○ Sensory perception:1-3
○ Activity   :1-3
○ Mobility   :1-3

K Scale
○ Impossible to change position by oneself
○ Extreme bony prominence
○ Interface pressure

● **Care for risk factors**

▪ *For Bedridden*
  Choose support surface
▪ *For Chair-bound*
  Positioning, Using cushion

Skin care

Risk assessment
○ Articular contracture
○ Moisture
○ Edema

○ Moisture   :1-2
○ Friction and Shear :1-2

K Scale
○ Moisture
○ Shear

▪ Reduction of shear and friction
▪ Moisture
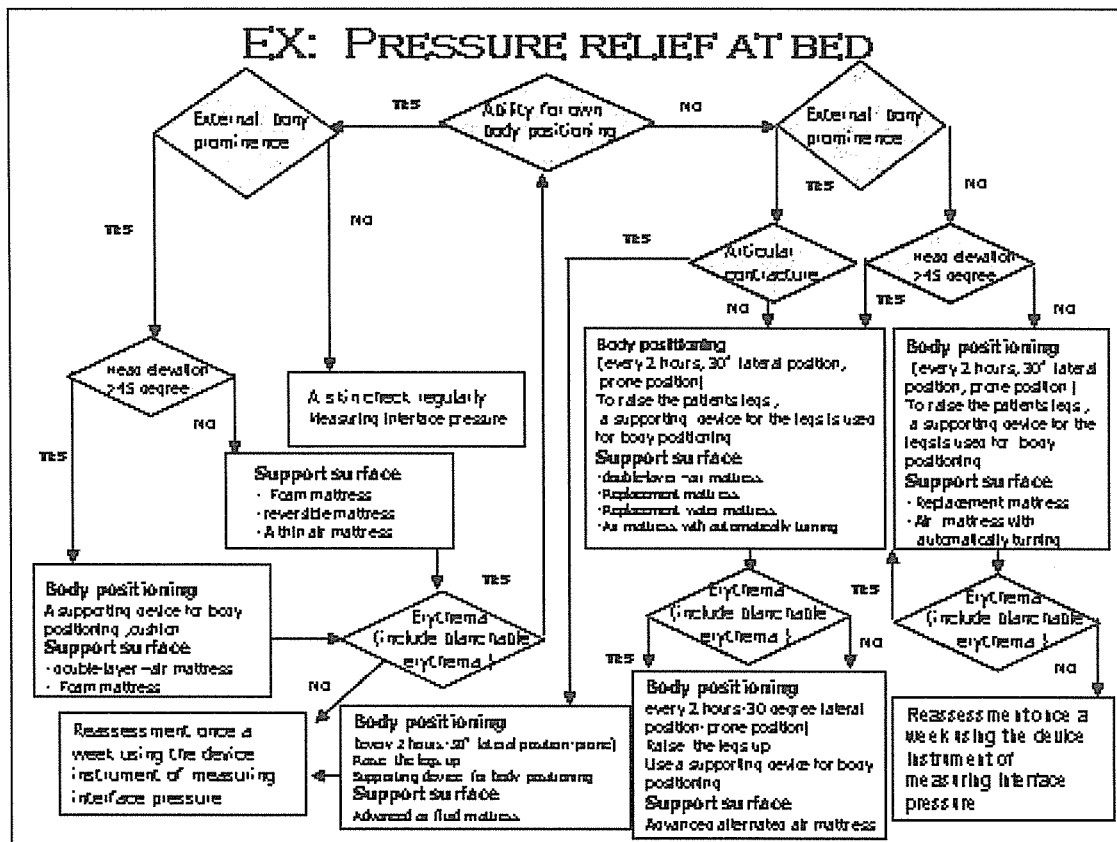▪ Edema

Nutrition

Risk assessment
○ Malnutrition

○ Nutrition:1-2

K Scale
○ Malnutrition

▪ Nutrition management

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EX: PRESSURE RELIEF AT BED

CHALLENGES FOR THE FUTURE

☑ Risk factors for pressure ulcer development are always simultaneously present, and therefore nurses should intervene for each risk factor simultaneously; however, the present system cannot allow for multiple nursing care in parallel.

☑ From a clinical view point, the reliability of this algorithm should be verified. This system should be used continuously by providing the same prevention even with change in the hospital environment such as changing hospitals or being discharged.

CONCLUSION

This algorithm can serve as an educational tool by which general nurses can learn the advanced expert interventions by utilizing their own knowledge and skills, while they can also help contribute to a high standardization of nursing care. We should carefully consider these points in order to improve the quality of nursing.

Structural visualization of expert nursing: care to prevent tuberculosis infection for outpatients at their hospital visits

Hiroshi Wakisaka [a],Akiko Tanaka [b],Yoshiko Kikuichi [b],Kyoko Kojima [c],Kuniko Fujiki [c],SatokoTsuru [d]

[a] School of Nursing, Kitasato University, Kanagawa Prefecture, Japan
[b] East Hospital, Kitasato University, Kanagawa Prefecture, Japan
[c] Kitasato University Hospital, Kanagawa Prefecture, Japan ; [d] University of Tokyo, Tokyo, Japan

Opening summary

Tuberculosis infection poses a serious challenge for preventing transmission of contagious diseases at medical treatment facilities in Japan. The authors have therefore developed an algorithm for providing care to prevent tuberculosis infection during the critical period between initial consultation and being admitted to the hospital.

Keywords: Algorithm, tuberculosis infection, infection control, expert nursing

Introduction

Tuberculosis, which is an airborne disease, requires a quick, coordinated response from those involved from medical treatment facilities to local area at onset of the disease when it is most contagious There is however few facilities in Japan equipped to handle tuberculosis patients Care is therefore provided to tuberculosis patients and patients who could possibly be infected with tuberculosis at those facilities In order to contribute to prevention of tuberculosis infection and the advancement nursing care, the authors set about to develop an algorithm for providing care to prevent tuberculosis infection at facilities that are not equipped for handling tuberculosis patients.

Methods

1. Nursing practice terminology for prevention of tuberculosis infection was carefully selected by our research group consisting of accredited nurses for infection control and health administrators based on the following materials the tuberculosis prevention method, the guidelines of JNA (Japanese Nursing Association) and CDC (Centers for Disease Control and Prevention), and researches by Japanese society of nursing care and infection control.
2. The algorithm for providing care to prevent tuberculosis infection at facilities that are not equipped for handling tuberculosis patients was created using the "Standard Nursing Practice Terminology Master" by Satoko Tsuru, et al

Results

The algorithm was created based on the following three factors 1)coordination with local medical treatment facilities, and mandatory hospitalization in accordance with the laws, 2)tests and prevention of infection on scientific grounds and 3)psychological care for patients and their families based on Infection control nursing

Close collaboration between nurses and ability to make decisions were indispensable for these three elements. As a result, the algorithm helps prevent contamination within the hospital, helps prevent hospital staff from being infected and helps prevent contamination in cities.

Discussion

Tuberculosis infection can be prevented by implementing the algorithm, but the ability to perform fundamental infection control and lots of work are required of nurses who deal with outpatients. In the future the usefulness of the algorithm needs to be studied by interviewing outpatient nurses, etc.

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Address for correspondence
Hiroshi Wakisaka
Office:School of Nursing KITASATO University
Address:2-1-1 Kitasato Sagamihara-City KANAGAWA 228-0829.JAPAN
email : backy@nrs.kitasato-u.ac.jp