# Changing practice to prevent contrast-induced nephropathy

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*Based on updated evidence, a radiology nurse systematically engaged a multidisciplinary staff in testing a protocol to prevent contrast-induced nephropathy related to computed tomography. In a quality improvement project, the protocol combined preprocedure oral hydration with postprocedure intravenous saline. This protocol safely improved kidney function, reduced postprocedure time, and decreased annual cost. By applying theory, being persistent, presenting sound evidence, and unifying the team, one concerned staff nurse profoundly affected patient care and policy in an entire medical center.* (J Vasc Nurs 2014;32:10-17)

At a busy radiology department within an urban medical center, a staff nurse became concerned about patients' nephropathy related to intravenous (IV) contrast used for computed tomography (CT). The existing hospital policy was accepted practice because "we've always done it this way," but evidence from research findings and problematic patient access to CT in the department showed that change was needed. Believing that nursing plays a key role in preventing contrast-induced nephropathy (CIN) by identifying patients at risk and planning for prophylaxis, the staff nurse utilized stages in Rogers' theory of diffusion of innovations to engage staff in a quality improvement (QI) project.[1] New evidence confirmed that changes in hydration could improve patient care.

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Data from 2006 to 2009 were presented as "Reducing the Need for Sodium Bicarbonate Infusions in Patients At-Risk for Contrast-Induced Nephropathy":

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We have presented herein the QI project and include examination of the local problem, background clinical issues, behaviors of resistance to change, Rogers' theory that guided steps for change, project results, and sustained outcomes that confirmed adoption of the new policy beginning within one department and spreading to the entire medical center. Hence, the purposes of this paper are to (1) share an evidence-based practice in radiology that, when adopted, improved patients' kidney function, unit teamwork, and institutional policy; (2) describe the process including a QI project to achieve adoption and policy change; and (3) explain the challenges and successes on the staff nurse's journey to promote change.

Rogers[1] describes five stages involved in adopting an innovation: (1) *Knowledge* involves exposure, learning about, and understanding a proposed innovation; 2) *persuasion* involves development of a favorable attitude about the innovation; 3) *decision* entails involvement such that activities begin that will lead to a choice about actually adopting the innovation; 4) *implementation* involves trying the innovation, making the change in the setting to do the necessary activities; and 5) *confirmation* when enough steps have been taken so the decision can be made to keep, reject or delay the innovation. Table 1 describes the staff nurse's goals and activities according to Rogers' stages.

## THE LOCAL PROBLEM: NEED FOR QI

As of 2006, the radiology department's protocol to reduce CIN for patients undergoing CT imaging was to administer IV sodium bicarbonate to patients with estimated glomerular filtration rates (eGFR) of <60 mL/min for 1 hour precontrast and 6 hours postcontrast. Staff and resources were overwhelmed with the increasing numbers of patients requiring the 6-hour infusions. Consequently, appointments were cancelled because of the lengthy infusions, wait times for CT imaging increased, space was limited, and overtime staff costs were becoming unmanageable; the department clearly lacked the resources to support prolonged infusions for these patients. An evidence-based approach for safe volume supplementation—oral fluids as a new protocol—was sorely needed. Based on the literature, the department's multidisciplinary team tested the new practice of oral volume supplementation in combination with IV saline in March 2009.

**TABLE 1**

**USING ROGERS' THEORY OF THE STAGES OF INNOVATION DIFFUSION FOR CREATING GOALS AND ACTIVITIES**

| *Goals* | *Nurse's activities to accomplish stage* |
|---|---|
| Knowledge | |
| *Goal*: Provide information to maximize everyone's understanding of the innovation (new protocol) | Communicate among staff to identify the existing problems |
| | Update own knowledge of research findings about existing practice and policy; literature review and critique |
| | Discuss findings from literature with staff findings from literature with staff |
| | Expose leadership to needs for change |
| | Understand skills required to make changes: teamwork, interdisciplinary collaboration |
| Persuasion | |
| *Goal*: Gain leadership support within the department from nursing and medicine | Maintain positive attitude |
| | Share with nursing leadership the local problems, literature, an evidence-base for a new protocol |
| | Discuss evidence from research findings with attending physicians; continuous discussions |
| | Discuss alignment of new protocol with department and medical center goals |
| | Explore expectations of patient benefit |
| | Explore quality improvement methods for testing effect of the new protocol |
| | Describe new behaviors for making the change |
| | Examine support: Identify early adopters and resisters |
| Decision | |
| *Goal*: Obtain support for involvement in the new protocol | Establish nursing and medical leadership support; identify their expectations |
| | Discuss intention to change to the new protocol for testing |
| | Provide all staff with access to information, articles, and plans |
| | Reinforce plan to change and rationale for change through frequent in-services |
| | Develop and share a timeline for the new protocol testing |
| | Maintain openness for discussion about pros and cons of implementation |
| Implementation | |
| *Goal*: Obtain staff engagement and participation in changing practice to test the new protocol | Present updated research findings to all staff; continue to motivate early adopters and encourage their cheerleading role |
| | Explore resistance, engage supporters to help motivate others |
| | Invite peers to present data collection findings; include peers as project team members |

(*Continued*)