ported at 5.3 per 100 000 person-years.[7] However, this difference is probably not significant, given that the method applied to correct for transient antigenemia among incident HBV cases is susceptible to some imprecision.

These data confirm the declining risk associated with window-period donations, which represent the major residual source of transfusion-related transmission of HIV, HCV and HTLV. For HBV, in addition to the window period, there is also the risk posed by chronically infected donors whose antigen level is too low to be detected by the HbsAg screening test. This risk, estimated at approximately 1 in 50 000 donations,[9] can be mitigated by testing donors for hepatitis B core antibody.

Marc Germain
Stéphanie Gélinas
Gilles Delage
Héma-Québec
Montréal, Que.

References

1. Glynn SA, Kleinman SH, Wright DJ, Busch MP; NHLBI Retrovirus Epidemiology Donor Study. International application of the incidence rate/window period model. *Transfusion* 2002;42:966-72.
2. Dodd RY, Notari IV, Stramer SL. Current prevalence and incidence of infectious disease markers and estimated window-period risk in the American Red Cross blood donor population. *Transfusion* 2002;42:975-9.
3. Application of nucleic acid testing to blood borne pathogens and emerging technologies OBRR/CBER/FDA workshop [transcript online]; 2001 Dec 4. Washington: US Food and Drug Administration, Center for Biologics Evaluation and Research; Office of Blood Research and Review; updated 2002 Feb 4. Available: www.fda.gov/cber/minutes/nuclacd1204p1.htm (accessed 2004 Jan 21).
4. Pillonel J, Laperche S, Saura C, Desenclos JC, Couroucé AM; Transfusion-Transmissible Agents Working Group of the French Society of Blood Transfusion. Trends in residual risk of transfusion-transmitted viral infections in France between 1992 and 2000. *Transfusion* 2002;42:980-8.
5. Velati C, Romano L, Baruffi L, Pappalettera M, Carreri V, Zanetti AR. Residual risk of transfusion-transmitted HCV and HIV infections by antibody-screened blood in Italy. *Transfusion* 2002;42:989-93.
6. Alvarez M, Oyonarte S, Rodriguez PM, Hernandez JM. Estimated risk of transfusion-transmitted viral infections in Spain. *Transfusion* 2002;42:994-8.
7. Chiavetta JA, Escobar M, Newman A, He Y, Driezen P, Deeks S, et al. Incidence and estimated rates of residual risk for HIV, hepatitis C, hepatitis B and human T-cell lymphotropic viruses in Canada, 1990–2000. *CMAJ* 2003;169(8):767-73.
8. Remis RS, Delage G, Palmer RWH. Risk of HIV infection from blood transfusion in Montreal. *CMAJ* 1997;157(4):375-82.
9. Kleinman SH, Busch MP. HBV: amplified and back in the blood safety spotlight. *Transfusion* 2001;41:1081-5.

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Management of dysphagia

It is gratifying to see attention paid to the nutritional status of stroke patients with dysphagia, an often overlooked aspect of care.[1] However, it is unfortunate that Hillel Finestone and Linda Greene-Finestone promulgate some of the misperceptions that abound in the area of managing patients with a swallowing disorder.

One of the most distressing errors, which often leads to inappropriate management, appears in the article title.[1] Dysphagia cannot be "diagnosed." Rather, it is a symptom of several hundred conditions and cannot be managed properly without identification of the source. Dysphagia has come to be discussed as though it were a disease in and of itself, which leads to the misperception that there is a standard approach to its management. This has in turn led to various inappropriate strategies for care,[2] including some that contribute significantly to dehydration,[3] as the authors have noted elsewhere.[4] Where Finestone and Greene-Finestone refer to "overnight intravenous fluid administration,"[1] it is to be hoped that they mean hypodermoclysis, the long-term hydration method of choice.[5]

The case presented[1] illustrates the most problematic of all issues associated with oropharyngeal dysphagia: aspiration. The patient in this case is described as having "pneumonia" in both lungs on the day of admission (also the day of insult). However, this is clearly a case of aspiration pneumonitis, caused by inhalation during the reported vomiting, not bacterial pneumonia requiring antibiotics.[6–9] Antibiotic therapy, as mentioned in the case description, might well be prophylactic against the secondary bacterial infection that often occurs but would not be effective for chemical pneumonitis. Secondary pneumonia is most often caused by aspiration of saliva, an event that also occurs in healthy adults and that is best avoided by scrupulous mouth care.[10]

In the final section, "The case revisited," the authors state that "Mr. B's pneumonia is a strong indicator that aspiration occurred. His pneumonia is a probable sequela of aspirating saliva. Mr. B is not allowed to have anything by mouth when he is admitted to hospital."[1] Finestone and Greene-Finestone have missed the obvious at several levels. The patient's "pneumonia" on admission was certainly the result of aspiration but could not have been due to aspiration of saliva (bacterial pneumonia). The solution is not to give him nothing by mouth but instead to identify the real cause of the problem and ensure scrupulous mouth care while maintaining good nutrition and hydration.

Of the remaining misperceptions, one in particular requires mention: there is no relation between the presence or absence of a gag reflex and the ability to swallow.[11]

Irene Campbell-Taylor
Clinical Neuroscientist
University of Toronto
Toronto, Ont.

References

1. Finestone HM, Greene-Finestone LS. Rehabilitation medicine: 2. Diagnosis of dysphagia and its nutritional management for stroke patients. *CMAJ* 2003;169(10):1041-4.
2. Ali GN, Laundl TM, Wallace KL, Shaw DW, Decarle DJ, Cook IJ. Influence of mucosal receptors on deglutitive regulation of pharyngeal and upper esophageal sphincter function. *Am J Physiol* 1994;267:G644-9.
3. Whelan K. Inadequate fluid intakes in dysphagic acute stroke. *Clin Nutr* 2001;20:423-8.
4. Finestone HM, Foley NC, Woodbury MG, Greene-Finestone L. Quantifying fluid intake in dysphagic stroke patients: a preliminary comparison of oral and nonoral strategies. *Arch Phys Med Rehabil* 2001;82:1744-6.
5. Sasson M, Shvartzman P. Hypodermoclysis: an alternative infusion technique. *Am Fam Physician* 2001;64:1575-8.
6. Marik PE. Aspiration pneumonitis and aspiration pneumonia. *N Engl J Med* 2001;344:665-71.
7. DePaso WJ. Aspiration pneumonia. *Clin Chest Med* 1991;12:269-84.
8. High KP. Pneumonia in the elderly: new approaches to an old problem. *Infect Med* 1997;14(8):617-8.
9. Marom EM, McAdams HP, Erasmus JJ, Goodman PC. The many faces of pulmonary aspiration. *Am J Roentgenol* 1999;172:121-8.
10. Yoneyama T, Yoshida M, Ohrui T, Mukaiyama H, Okamoto H, Hoshiba K, et al. Oral care reduces pneumonia in older patients in nursing homes. *J Am Geriatr Soc* 2002;50:430-3.
11. Bleach NR. The gag reflex and aspiration: a ret-

rospective analysis of 120 patients assessed by videofluoroscopy. *Clin Otolaryngol* 1993;18:303-7.

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Hillel Finestone and Linda Greene-Finestone[1] offer many useful points in their article on dysphagia. However, it is disappointing that the technique and value of swallowing retraining[2,3] are not mentioned.

Credit for recognizing that stroke victims may "forget" how to swallow, and can be retrained to do so, goes to Henry Heimlich.[4,5] Both of his papers are well worth reading, as they document the pioneering of a new therapy. In brief, the technique of swallowing retraining is based on the idea that the reflex sequence of deglutition can be retaught if it is lost as a result of stroke. Heimlich's original reports[4,5] described patients being instructed in sucking, elevation of the larynx and coordination of those functions. People who have lost the ability to swallow for other reasons, such as disuse atrophy of the pharyngeal muscles, can also be retrained.

Over a period of years this mode of rehabilitation gradually became the domain of speech pathologists, and many physicians who care for stroke patients have unfortunately remained completely unaware of it. If there is swallowing dysfunction but no speech impediment, it is quite possible that a speech pathologist will not be consulted, and the patient may be unnecessarily consigned to permanent gastrostomy. As described in the article,[1] swallowing function returns spontaneously in some cases. In others, it does not — but in some of those patients, it can be restored by retraining.

Fred Saibil
Division of Gastroenterology
Sunnybrook and Women's College
Health Sciences Centre
University of Toronto
Toronto, Ont.

References

1. Finestone HM, Greene-Finestone LS. Rehabilitation medicine: 2. Diagnosis of dysphagia and its nutritional management for stroke patients. *CMAJ* 2003;169(10):1041-4.
2. Saibil FG. Swallowing retraining for transfer dysphagia [abstract]. *Gastroenterology* 1988;94: A394.
3. Saibil FG. Restoration of swallowing in patients with transfer dysphagia [poster]. Royal College of Physicians and Surgeons of Canada annual meeting; 1988 Sep; Ottawa.
4. Heimlich HJ, O'Connor TW. Relearning the swallowing process. *Ann Otol Rhinol Laryngol* 1979;88(Pt 1):794-7.
5. Heimlich HJ. Rehabilitation of swallowing after stroke. *Ann Otol Rhinol Laryngol* 1983;92(Pt 1): 357-9.

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Hillel Finestone and Linda Greene-Finestone[1] note that "if the risk of aspiration is high, enteral nutrition (tube feeding) should be provided." Unfortunately, there is little evidence to support the implication that enteral nutrition through a tube reduces the risk of aspiration pneumonia. Tube feeding does not afford protection against aspiration of oropharyngeal secretions, which may be colonized. The incidence of aspiration pneumonia is similar in subjects fed by nasogastric tube, gastrostomy or postpyloric tube.[2–6] None of the cited studies compared the incidence of aspiration pneumonia among subjects receiving enteral nutrition with that among patients fed intravenously.

Finestone and Greene-Finestone[1] identify complications of enteral nutrition in their online Appendix 2,[7] noting that several of these may be life-threatening. There appears to be a need for good quality-of-life studies of stroke subjects with dysphagia randomly assigned to various feeding and hydration techniques. As the authors have already shown,[8] such studies are made more difficult by the spontaneous recovery of swallowing in almost two-thirds of subjects within 2 to 4 months.

Roy M. Preshaw
Lady Minto Hospital
Salt Spring Island, BC

References

1. Finestone HM, Greene-Finestone LS. Rehabilitation medicine: 2. Diagnosis of dysphagia and its nutritional management for stroke patients. *CMAJ* 2003;169(10):1041-4.
2. Park RH, Allison MC, Lang J. Randomised comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients with persistent neurological dysphagia. *BMJ* 1992;304:1406-9.
3. Baeten C, Hoefnagels J. Feeding via nasogastric or percutaneous endoscopic gastrostomy: a comparison. *Scand J Gastroenterol Suppl* 1992;194:95-8.
4. Strong RM, Condon SC, Solinger MR, Nahimas BN, Ito-Wang LA, Leuty JE. Equal aspiration rates from postpylorus and intragastric-placed small-bore nasoenteric feeding tubes: a randomized, prospective study. *JPEN J Parenter Enteral Nutr* 1992;16:59-63.
5. Spain DA, DeWesse RC, Reynolds MA, Richardson JD. Transpyloric passage of feeding tubes in patients with head injuries does not decrease complications. *J Trauma* 1995;39:1100-2.
6. Fox KA, Mularksi RA, Sarfati MR. Aspiration pneumonia following surgically placed feeding tubes. *Am J Surg* 1995;170:564-6.
7. Finestone HM, Greene-Finestone LS. e-Appendix 2: Enteral nutrition (tube feeding) [online]. *CMAJ* 2003;169(10). Available: www.cmaj.ca/cgi/data/169/10/1041/DC1/1 (accessed 2004 Jan 23).
8. Finestone HM, Greene-Finestone LS, Wilson ES, Teasell RW. Malnutrition in stroke patients on the rehabilitation service and at follow-up: prevalence and predictors. *Arch Phys Med Rehabil* 1995;76:310-6.

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[One of the authors responds:]

Irene Campbell-Taylor is correct that dysphagia can be a symptom of a wide variety of conditions; however, our article[1] specifically discusses dysphagia as a result of central neurologic conditions, in this case stroke, and we do not think that the context would be misconstrued by our audience.

Campbell-Taylor hopes that by the term "overnight intravenous fluid administration" we actually meant hypodermoclysis, which she characterizes as "the long-term hydration method of choice." Hypodermoclysis[2] is a fine method of hydration that unfortunately has not yet caught on to a significant degree in Canadian hospitals, and it would have been a good choice for fluid administration. However, given the typical evolution of dysphagia, fluids may not be required for a prolonged period, so it was not necessary to choose a long-term method.

Campbell-Taylor also emphasizes that aspiration pneumonia must be differentiated from aspiration pneumonitis. Marik[3] distinguished these 2 entities but noted that "some overlap exists." When a patient presents to the emergency department with a history of stroke, dysphagia and bona fide infiltrates on radiography, as in the case described, we feel that antibiotics would be indicated, especially given the "sick" state (hyperglycemia, hypertension) ex-