AMERICAN RE HEALTHCARE
A Division of American Re-Insurance Company
NewsLetter
August 2006

Neonatal Respiratory Failure: Recent Advances in Treatment

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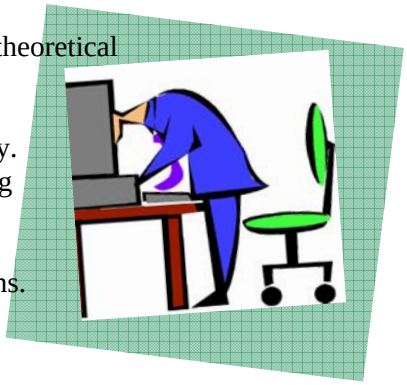
Predictive Modeling: Moving to Mainstream in US Healthcare Industry



Predictive Modeling, once considered a theoretical application best suited for academics, is increasingly finding its way into the mainstream of the US healthcare industry. Recent surveys show predictive modeling tools were outperforming traditional underwriting algorithms, in some cases, producing significant increases in margins. *[See page 3]*

What's a "Floor" For? Transplant Contract Considerations

Inliers, outliers, inclusions, exclusions, days allowed, per diems, case rate, stop-loss or floor provisions? In today's transplant market the question is what combination of terms and conditions will provide adequate protection while maintaining savings and price predictability? We offer some guidelines for your consideration. *[See page 4]*

Coming Down the Pipeline: New Medical Technologies

Our newest feature continues in this edition with three more medical technology advances that are expected to have significant cost increases in the near future. *[See page 6]*

- American Re-Insurance Co. has announced that it will change its name to **Munich Reinsurance America, Inc.** in early September. Additional details will be available after the change is implemented.
- American Re HealthCare is holding its second **Claims and Care Management Conference September 13 -14** in Princeton, NJ.
- Additional Industry Events ARHC will participate in this year:
  - AHIP Medicare: 9/11-12 Washington, DC
  - AHIP Medicaid: 9/13-14, Washington, DC
  - SIAA: 10/15-18, Phoenix
  - AHIP Business Forum: 11/8-9, NY
  - DMAA: 12/3-5, Denver

- In an effort to reduce medical errors, the Joint Commission on Accreditation of Health Care Organizations is requiring hospitals, for the first time, to establish standards for hand-off communications.

The Wall Street Journal (6/28/06) reports on one such protocol: SBAR (Situation, Background, Assessment, Recommendation) which borrows from strategies used in aviation and the military, where hand-off failures can be catastrophic.

Neonatal Respiratory Failure: Recent Advances in Treatment

By Ed Karotkin, MD

The past few decades have seen remarkable advances in the treatment of neonatal respiratory failure. This is a result of more sophisticated neonatal ventilators, better monitoring equipment, refined methods of blood gas measurement, advances in pharmacology, and the widespread use of artificial surfactants (agents that promote gas exchange within the lung).

More recently, high frequency ventilation (HFV) and inhaled nitric oxide therapy (iNO) are being used in Neonatal Intensive Care Units to further improve survival of the smallest and sickest infants.

High Frequency Ventilation

In spite of improvements in ventilation techniques, chronic lung disease following mechanical ventilation for respiratory failure in both premature and term infants is still a problem. However, there is evidence that HFV may improve gas exchange in neonates experiencing respiratory failure, allowing the primary goals of ventilation and oxygenation to be achieved without the risks of pressure-induced lung injury.

The principles of HFV involve the use of higher ventilatory rates, typically above 60 breaths per minute, lower peak inspiratory pressures, and lower tidal volumes to support respiration.

The types of high frequency ventilators include those that provide high frequency positive pressure ventilation, high frequency oscillatory ventilation, and high frequency jet ventilation. High frequency oscillator and jet ventilators can deliver extremely rapid rates (about 600-800 breaths per minute) at very small tidal volumes.

The intent of HFV is to achieve and maintain optimal lung inflation. Optimal oxygenation is achieved by gradual increments in airway pressure to increase lung volume without causing over-distension of the lungs.

Generally accepted indications for HFV are neonatal air leak syndromes, neonatal respiratory distress syndrome, persistent pulmonary hypertension, meconium aspiration syndrome, congenital diaphragmatic hernia, pulmonary hypoplasia, pediatric ARDS, and respiratory syncytial virus pneumonia. Contraindications for the use of HFV are obstructive airway disease, cardiovascular system dysfunction, and shock.

Although HFV may produce gas exchange at lower airway pressures than conventional ventilators, and HFV may appear to be superior to other forms of ventilation, it must be recognized that HFV is an emerging technology and there is no good evidence that HFV is better than conventional ventilation for neonates with respiratory failure.

Inhaled nitric oxide

At birth, in response to the first minutes of breathing air, the blood vessels in the infant's lungs normally relax, permitting an increase in pulmonary blood flow. This phenomenon makes it possible for the blood to exchange carbon dioxide for oxygen. However, when this adaptation fails and pulmonary arterial blood pressure persists, infants may develop persistent pulmonary hypertension (PPHN), which is a syndrome characterized by inadequate blood flow through the pulmonary circulation resulting in poor delivery of oxygen to vital organs.

Nitric oxide relaxes the smooth muscles of the pulmonary arterioles, allowing the lung to function normally by oxygenating the blood and eliminating carbon dioxide through respiration.

Reports indicate that the typical patient who benefits from iNO therapy is the near-term newborn >34 weeks gestation in the first week of life with

echocardiographic evidence of extrapulmonary right-to-left shunting and an Oxygen Index > 25 after effective lung recruitment.

For term infants with PPHN, most studies indicate that iNO improves oxygenation and decreases the need for extracorporeal membrane oxygenation (ECMO), an invasive and expensive procedure analogous to a heart-lung bypass machine. Trials are currently evaluating the use of iNO in premature infants with hypoxemic respiratory failure, although it is too early to advocate this as an accepted method of treating premature infants with respiratory failure.

Dr. Karotkin is the Chief Medical Officer for CareAssist. This article's contents and any opinions therein are those of the author and are not attributable to American Re-Insurance Company

Predictive Modeling: Moving to Mainstream in US Healthcare Industry

Predictive Modeling, once considered a theoretical application best suited for academics, is increasingly finding its way into the mainstream of the US healthcare industry. In fact, every major health plan included in a recent survey was currently using predictive modeling in some form, whether for pricing purposes, medical management, or both, according to a presentation at the Society of Actuaries and Disease Management Association of America's 3rd Annual Predictive Modeling Applications Seminar. http://ce.soa.org/PredictiveModeling/Plenary%20Session%203_Combo.pdf (pp 1-6)

The survey also found that, in some cases, predictive modeling tools were outperforming traditional underwriting algorithms and producing significant increases in margins. In addition, these tools were also found to be a vehicle for productive collaboration between actuaries and medical managers.

Small Group Renewal Ratings

Predictive modeling initially relied on medical claims data, but as newly developed sources of pharmacy data became available, they also were included. Economies of scale allowed larger insurers to be among the first to begin using this tool to sort existing clients into increasingly specific cost categories. Predictive modeling began allowing them to determine that not only is a given group more or less expensive to insure, but rather VERY expensive or VERY inexpensive. Among middle-of-the-road groups, it was possible to further differentiate upper-middle, middle, and lower-middle categories of expense.

Two presentations at the SOA/DMAA conference showed how this modeling helps improve the small group renewal rating process. Click here (http://ce.soa.org/PredictiveModeling/Plenary%20Session%203_Combo.pdf (pp 7-14) http://ce.soa.org/PredictiveModeling/Bachler-4A.pdf)

New Business Rating Methods

It's just within the past few years that companies began forming to specialize in the collection of pharmacy data. These aggregation companies gather eligibility and pharmacy claim information from most of the major pharmacy benefit managers in the US. The resulting databases were used by large health insurers to check the accuracy of insurance applications. For example, an applicant reports no history of heart problems, but his pharmacy record shows several heart medications. Red flag!

Now, pharmacy data and pharmacy-based predictive models are being used to underwrite new business. The process works as follows:

- Enrollee identification numbers for all eligible insureds are provided to a pharmacy claim aggregation company.
- The aggregation company returns claim information (or reports the absence of claims) for every individual for whom they found eligibility information.
- Armed with a history of pharmacy claims, the insurer runs this information through a predictive model that relies solely upon drug data to predict future medical costs.

Two presenters at the SOA/DMAA conference noted improved underwriting results when this type of predictive modeling was used to supplement existing methodology and workflow. http://ce.soa.org/PredictiveModeling/MillardandMinnich5A.pdf

Recent Improvements in Modeling
For several years, predictive modeling companies have largely utilized medical claim and pharmacy data from one 12-month period to attempt to predict medical costs for the following 12 months. However, many relatively new and potentially beneficial variables have recently been implemented. These include

- Inclusion of lab values (e.g. insulin levels for diabetics) as a predictor variable
- Inclusion of prior period costs (pharmacy and medical) as a predictor variable
- Inclusion of "patient reported values" (e.g. patient's sense of own health status, functional status)
- Incorporation of an underwriting lag
- Adjustment for individuals for whom claims data is not available for the full 12-month period.

Cost vs. benefit

Predictive modeling can be expensive. A system either has to be purchased or built, and data extraction to feed the model takes time. Today, economies of scale have allowed primarily larger health insurers to be among the first to enjoy the benefits of this tool. As a result, they are better equipped to predict risk - either identifying the better risks or better pricing the poorer risks

ARHC a Predictive Modeling Resource
For mid-size and smaller companies who recognize the strategic value of this new tool, American Re HealthCare can assist in obtaining predictive modeling services at a more affordable rate.

Whether you think a predictive modeling tool is right for your company or not, this trend bears watching. As the use and success of predictive modeling becomes more documented, awareness of its value will continue to grow and its evolution from innovative theory to a market-standard application will continue. Companies late to employ any good new tool will find themselves, at best, scrambling to catch up, and at worst, left with nothing but their own pricing mistakes.

What's a "Floor" For? Transplant Contract Considerations

By Kevin O'Brien

In today's transplant market, there are many contract terms and conditions that determine the overall value a payer receives by accessing a transplant network. The total combination of inliers, outliers, inclusions, exclusions, days allowed, per diems, case rate, stop-loss or floor provisions and many other terms ultimately determine the average discount and price predictability a particular provider contract will yield. The question is what combination of these terms and conditions will provide adequate protection while maintaining savings and price predictability.

One of the most important terms negotiated in a transplant provider agreement is a "floor" provision. A floor typically guarantees the provider some minimum level of payment relative to total billed charges. In other words, in no case would the provider receive less than an agreed upon percentage of their total billed charges.

Historically, floors have been viewed as disadvantageous to payers, and in most cases, they were. Early on in the development and delivery of transplant services, providers were willing to accept almost unlimited financial risk in order to establish their programs, and payers were very pleased to transfer the risk. In today's market, premier transplant programs require some form of protection against catastrophic cases. They are requiring direct economic protection through a floor, or indirect protection by limiting case rate inclusions (organ acquisition, National Marrow Donor Program fees, days included, etc.) or a combination of both.

Granting providers minimum financial protection through a floor and maintaining the services and resources necessary to perform a transplant inside a market-competitive case rate significantly reduces a payer's financial exposure to some of the most economically catastrophic cases they face. This is accomplished by establishing the true cost of providing care relative to the provider's "charge master," or retail rates, and then setting the floor at that level along with language that ties the floor to the current agreed-upon charge master. Future increases to the charge master due to inflation or for any reason would trigger a corresponding reduction to the floor level so as to be revenue neutral to the provider. With the floor set at the cost of care, providers can only make a meaningful profit on cases that do not trigger the floor provision. As a result, providers are properly motivated to deliver quality, cost-effective care.

Payers should be concerned about provider agreements that are direct percent discount agreements or agreements that have most transplant costs paid outside the case rate at percent discounts above true cost. The national average charge-to-cost ratio for hospitals is 206%. This means that the average hospital bills $2.06 for every $1.00 it costs to provide care. That means a floor of 47% of billed charges is break even relative to the cost of providing care. However, charge-to-cost ratios vary considerably by region and center. Networks must review each facility individually to determine its specific charge-to-cost ratio. Then, if the center is attempting to remove large parts of the economic risk from the case rate or if a floor is required as a condition to contract, the network must set an appropriate rate floor at the center's true cost.

Kevin O'Brien is senior vice president of network contracting for United Resource Networks (U.R.N.). U.R.N. is a leading transplant network, with over 3,000 clients representing 48 million lives.

Considering a Transplant Network?

1. *Transparency is a must! If you can't see the specific rates and terms under which you pay, be suspicious.*
2. *Is there a floor, stop-loss or outlier provision. If so, what are they?*
3. *Is there language requiring the payer will "never pay less than XX% of billed charges?" If yes, what is the percentage and how was it established?*
4. *Does the case rate include both the transplant and necessary follow-up care?*
5. *Do days included in the case rate expire at discharge, or can they be used during subsequent admits?*
6. *Are organ procurement and donor search fees included in the base payment rate? If not, how are they paid?*
7. *How are re-transplants addressed?*
8. *How are pre- and post-transplant services paid for?*
9. *What data is used? Is it statistically valid? How and when is it refreshed to establish market-appropriate rates and terms?*
10. *What technical analytical capabilities, including systems, models, etc., are applied to establishing market appropriate rates and terms?*
11. *How many staff are focused full-time on provider negotiations?*
12. *What education and experience do the contract negotiators have?*

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Coming Down the Pipeline: New Medical Technologies

The following technologies have been identified this quarter by American Re HealthCare as those that may have significant cost impact in the current and subsequent years:

OvaCheck™ for detection of ovarian cancer - is being developed primarily as a screening tool to detect ovarian cancer in women at high risk for development of the disease. OvaCheck is a protein pattern recognition blood test for detection of ovarian cancer. Using proprietary pattern recognition software, the test scans a drop of blood from a patient's finger for protein patterns generated by mass spectrometry. The test is expected to cost $165 and have a peak utilization of 96.96/1000 in 2008. Projected PMPM impact: $0.43 (2006), $0.87 (2007), $1.30 (2008)

Visudyne® (verteporfin) - is currently approved by the Food and Drug Administration (FDA) for the treatment of predominantly classic subfoveal neovascularization due to either age-related macular degeneration (AMD), presumed ocular histoplasmosis, or pathologic myopia. Visudyne (verteporfin) is a photosensitive compound that is administered intravenously, and then activated by shining a nonthermal laser into the retina. The light-activated drug produces an active form of oxygen that destroys abnormal blood vessels. Treatment is repeated every 3 months. However, re-treatment intervals may shorten if ongoing clinical research indicates a significant benefit from shorter intervals. With application of the laser light and drug infusion fees, the estimated direct cost is equal to $5,719/year. A peak utilization of 0.95/1000 is expected by 2009 as the impact of competing therapies are felt in the market. Projected PMPM impact: $0.72 (2006), $0.67 (2007), $0.55 (2008)

The Vagus Nerve Stimulation Therapy (VNS Therapy™) – was approved by the FDA in July 2005 as an adjunctive treatment of chronic or recurrent depression in adults with chronic or recurrent treatment-resistant depression who are experiencing a major depressive episode that has not responded to at least four adequate antidepressant treatments. The device is surgically implanted subcutaneously below the collarbone near the armpit, and the lead is secured around the left vagus nerve through a small incision in the neck. The physician programs the generator to deliver an intermittent electrical current to the left vagus nerve at preset intervals. It is believed that such stimulation to the vagus nerve could provide some relief for this population. It costs approximately $30,000 (net of offsetting costs) and may have a peak utilization of 0.28/1000 by 2015. Projected PMPM impact: $0.53 (2006), $0.66 (2007), $0.64 (2008)

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