

## Understanding safer practices in health care: a prologue for the role of indicators

Vahé A. Kazandjian PhD MPH,<sup>1,2</sup> Karol Wicker MHS,<sup>3</sup> Sam Ogunbo PhD<sup>4</sup> and Nicole Silverman MBA<sup>5</sup>

<sup>1</sup>President, Center for Performance Sciences (CPS), Elkridge, MD, USA

<sup>2</sup>Adjunct Professor, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, USA

<sup>3</sup>Director of Data Analysis, CPS, Elkridge, MD, USA

<sup>4</sup>Statistician/Analyst, Quality Indicator Project<sup>®</sup>, Elkridge, MD, USA

<sup>5</sup>Vice President, CPS, Elkridge, MD, USA

### Correspondence

Dr Vahé A. Kazandjian  
Center for Performance Sciences (CPS)  
6820 Deerpath Road  
Elkridge MD 21075  
USA  
E-mail: vkazandjian@mhaonline.org

**Keywords:** accountability, indicators of safety, Quality Indicator Project<sup>®</sup>, value-free measures

### Accepted for publication:

8 April 2004

### Abstract

**Objectives** Patient safety and safer practices are central themes to many national strategies for accountability. The multinational Quality Indicator Project<sup>®</sup> (QI Project<sup>®</sup>) database is used to identify patterns of indicator use to measure safety of care in Asia, Europe, and the USA. The second objective is to assess, within the context of an indicator project, the usefulness of indicators to measure errors or mishaps. **Design and setting** This descriptive study retrospectively analyses indicator use patterns among hospitals in Asia, Europe, and the USA. The QI Project<sup>®</sup> database is used for the 1999–2002 period. Statistical testing (*P*-value) of the differences in use percentages across five countries is based on ‘country’ rather than ‘hospital’ as the unit of analysis. **Results** There was a significant increase in overall QI Project<sup>®</sup> indicator use worldwide between 1999 and 2002. The average change in use was 6.8% for safety indicators and 4.2% for all other indicators. When analysed by country (USA, Austria, Belgium, UK, and Taiwan), the average increases in use percentage were highest in Taiwan and Belgium. When the country-specific differences were tested for significance, Taiwan showed the largest (and statistically significant) increase in safety indicator use between 1999 and 2002 (*P* < 0.0001). In the USA, the rates of safety indicator use have decreased (*P* = 0.0502) during the same time period. **Conclusion** This paper identifies, perhaps for the first time, how traditional indicators of hospital performance are being used to understand a hospital’s performance and associated safety of care. Although the study’s time frame is limited to 3 years, the findings seem to suggest that the interest in using these traditional indicators as proxies for safer practice measures is increasing among the QI Project<sup>®</sup> participants worldwide. The challenge of using inherently value-free indicators as indicators of safety (hence de facto labelled as ‘error’ focused) should be further studied.

### Introduction

The renewed interest in understanding safer practices has led to a search for better measures of per-

formance across health care institutions. Although hospitals have always been expected to monitor adverse events on an ongoing basis through quality-assurance and risk-management activities, the Insti-

tute of Medicine (IOM) report of 1999 (Kohn *et al.* 2000) drew increased attention to the issue of 'safety'. Often defined as 'patient safety' approaches, the true intent of many initiatives is to understand the relationship between different modes of practice and undesirable outcomes. Thus, patient safety initiatives, while inherently sending an accountability message, are often, at their core, initiatives to define better organizational practices.

This paper discusses how existing indicators of performance can be used to measure safer practices or even 'patient safety'. Data from the Quality Indicator Project® (QI Project®) and its international component, the International Quality Indicator Project (IQIP) (see 'Sidebar' at the end of the article), are analysed to document the patterns of change (between 1999 and 2002) in hospital indicator use across the USA, Europe, and Asia. The second objective of this paper is to discuss the usefulness of value-free indicators in documenting errors and mishaps, clearly negative value-ridden definitions.

#### Safer practices and patient safety: a continuum of measurement

Patient safety is a high-priority goal as well as a measurable outcome for health care organizations. Health care providers, however, face formidable challenges in translating the nature and magnitude of iatrogenic risks expressed by indicator rates and trends into meaningful information for patients and communities. For example, a 15% risk of deep vein thrombosis has inherently no meaning to a patient undergoing hip replacement. A 3% unplanned re-admission rate says little to patients' families who must participate in a new health care episode that was, at least in their minds, unanticipated and unexpected. In contrast, a one-line statement during the evening news broadcast concerning a 'wrong site' or 'wrong patient' surgery can immediately shape a community's impression about the 'safety' of care services in their hospital. Even if there were only one wrong-site surgery for every 1000 or 10 000 similar surgeries, the rate itself is not central. In such statements, the power of the numerator in shaping popular opinion is more decisive than any predictive modelling. Therein lies the challenge to hospitals (1) of planning how to embark on measuring safety and

(2) in communicating the process and findings to wider audiences.

Objective and measurable indicators of performance can help health care organizations identify trends and patterns of practice as well as improvement opportunities. The QI Project® presents a unique worldwide repository of indicators that contain a subset of measures directly addressing questions of processes and immediate outputs. Health care organizations strategizing for accountability on safety of care may therefore be using the QI Project® to address the difficult necessity of measuring and communicating 'safety'.

#### The original intent of the QI Project® indicators

The QI Project® indicators were designed to address performance aspects through statistical and epidemiological techniques in a value-free manner. However, with the increased worldwide attention to patient safety, some of the measures may have a 'field-acquired' value as proxies for the safety of practices through their purposeful use as 'safety indicators' by many of the IQIP participants. While value-free indicators have been defined elsewhere (Kazandjian & Lied 1999), their fundamental characteristic is that the direction or the magnitude of the rates in themselves does not connote goodness or badness of performance. For example, a 10% re-admission rate cannot immediately be labelled as better than a 15% re-admission rate. Nor should a hospital reporting 7% falls in high-risk patients advertise itself as 'safer' than the hospital showing a 9% patient fall rate. The IQIP works closely with participating hospitals to avoid inappropriate use of the indicators. All the project indicators follow the same logic and have been shown to be generic constructs applicable across 1800 hospitals worldwide (Kazandjian *et al.* 1996; Thomson *et al.* 1997; Mechtler *et al.* 2002; Quathoven *et al.* 2002). Consequently, when an indicator measures safety of practices, it is the assessor of performance who places a value on (or 'evaluates') the level of safety reflected through the measures. In other words, 'safety' is not a value-free term; it immediately connotes an assessment of 'good' or 'bad'.

Despite the judgement about performance that may result from interpreting an indicator that measures a component of 'safety', the intent of an indi-

cator, through a rate, is not to ascertain 'goodness' (Kazandjian 2002), but to serve as a pointer (Kazandjian 1991) to narrow the inquiry's (i.e. Why something happened?) focus. Thus, while a number of IQIP indicators have implications for safer practice profiles in health care organizations, they should not be used alone as direct measures of safety during service delivery.

## Methods

### Background and setting

The current study follows observations from a previous analysis (Kazandjian *et al.* 2003) which compared patterns of QI Project® indicator use across hospitals in the USA, Europe, and Asia. When 10 of the most commonly used indicators' rates were evaluated, this earlier analysis showed comparability of use rates across measures, which were used by more than 700 hospitals in the USA and nine Asian and European countries during the period 1999–2001.

The present study explores the patterns of use of indicators being used as proxies for safer practices among IQIP participants. In comparing the frequency of these proxy indicators' use among hospitals in Asia, Europe, and the USA, seven distinct care provision and utilization categories emerged. These include: antibiotic prophylaxis; unscheduled readmissions; unscheduled admissions following ambulatory procedures; unscheduled returns to intensive care unit or operating room; physical restraints in the acute care setting; documented falls in the acute care setting; and unscheduled returns to the emergency department. Indicators from seven categories that showed the largest percentage point change in frequency of use from 1999 to 2002 for at least one of the above regions are shown in Table 1.

This study focuses on the above indicators, which were used worldwide by 1107 hospitals in 1999 and 1108 hospitals in 2002. The study focuses on this 1999–2002 time period for two reasons. First, the number of QI Project® participants from outside the USA using these indicators is of a critical mass to allow for analysis and comparisons during this period. Second, the IOM released its first report on patient safety in the USA in 1999 (Kohn *et al.* 2000), creating a global ripple effect. Therefore, the time

period 1999–2002 also allows for a possible 'before and after' assessment of the magnitude of increases in the use of indicators that imply safety and safer practices following the 1999 IOM report.

The methods of analysis are both descriptive and quantitative. The data, shown in Table 2, allow for a quick comparison of the frequency of safety indicator use by geographic region for 1999 and 2002. For this study, these indicators were chosen as 'safety' measures, from the more than 290 acute care measures available to hospitals using the QI Project® worldwide, because each reflects:

- 1 a distinct relationship between processes of care that have a high likelihood for 'safety breach', and
- 2 a high likelihood for error during the care process as established or strongly suggested in the literature.

### The unit of analysis

The country, not the individual hospital, is the unit of analysis. It is posited that the general atmosphere in the country, and the consequent incentives to embark on safer practices analysis, determines the overall patterns of indicator use changes over time (i.e. 1999 and 2002).

### The analysis of continuous use of safety indicators

In order for indicator usage in a particular country to be included in this analysis, there needed to have been continuous participation of the country's hospitals in the QI Project® or the IQIP. Such a methodological requirement was used in two previous studies (Kazandjian & Lied 1998; Kazandjian *et al.* 2003). This requirement eliminated from the current study hospitals in Portugal, Singapore, and Germany, where adoption of the IQIP began after 1999. For the remaining five countries, summary statistics for 1999 and 2002 were computed, and a two-tailed test was performed to detect any effect of time on the use of the indicators. For this paper, statistical significance is assessed at the 0.05 level.

### Safety vs. other QI Project® indicator use pattern profiles

As stated at the outset, a subset of IQIP indicators has been qualified as 'safety' measures by a number

**Table 1** Frequency of subindicator use as 'safety indicators' by region and year

IQIP subindicators*	ASIA		EUROPE		USA	
	1999 (40) <sup>†</sup>	2002 (79) <sup>†</sup>	1999 (36) <sup>†</sup>	2002 (195) <sup>†</sup>	1999 (1031) <sup>†</sup>	2002 (834) <sup>†</sup>
Antibiotic prophylaxis for hip arthroplasty within 2 hours prior to incision	27.50%	45.57%	13.89%	6.15%	27.93%	23.26%
Antibiotic prophylaxis for vaginal hysterectomy	22.50%	50.63%	2.78%	3.08%	26.77%	17.75%
Unscheduled acute care re-admissions within 15 days for the same or a related condition	52.50%	83.54%	41.67%	13.85%	47.82%	32.37%
Unscheduled acute care re-admissions within 31 days for DRG 127 heart failure and shock, or related condition	12.50%	21.52%	0.00%	4.10%	48.11%	53.12%
Unscheduled admissions following ambulatory cardiac catheterization	0.00%	7.59%	5.56%	11.79%	14.35%	11.63%
Unscheduled admissions following all other ambulatory operative procedures	5.00%	31.65%	8.33%	66.67%	39.28%	30.46%
Unscheduled returns to intensive care units	60.00%	88.61%	22.22%	12.31%	58.78%	47.12%
Unscheduled returns to the operating room	47.50%	78.48%	52.78%	84.10%	75.36%	69.30%
Acute care physical restraint events	17.50%	39.24%	0.00%	4.62%	21.92%	27.22%
Acute care physical restraint events because of risk of falling	15.00%	34.18%	0.00%	4.62%	0.00%	14.63%
Acute care inpatients with one or more physical restraint events	15.00%	35.44%	0.00%	4.62%	22.11%	20.98%
Documented falls in acute care	77.50%	86.08%	8.33%	17.44%	30.75%	45.56%
Documented falls in acute care resulting in injury with severity score 1	42.50%	70.89%	8.33%	12.82%	26.29%	30.10%
Unscheduled returns to the emergency department within 24 hours	42.50%	81.01%	5.56%	6.67%	39.77%	28.42%
Unscheduled returns to the emergency department within 24 hours resulting in an inpatient admission	45.00%	81.01%	5.56%	6.67%	35.11%	24.94%
Unscheduled returns to the emergency department within 72 hours	47.50%	82.28%	5.56%	6.67%	62.46%	53.96%
Unscheduled returns to the emergency department within 72 hours resulting in an inpatient admission	35.00%	77.22%	5.56%	6.67%	54.51%	43.88%

\*List of select subindicators representing measures from eight different categories.

<sup>†</sup>Calendar year followed by the number of participating hospitals in parenthesis.

Source: the International Quality Indicator Project (IQIP).

**Table 2** Number of hospitals by country reporting data for indicators in 1999/2002

<i>IQIP indicator</i>	<i>USA</i>	<i>Austria</i>	<i>Belgium</i>	<i>Taiwan</i>	<i>UK</i>
Antibiotic prophylaxis	386/279	2/3	1/0	12/45	2/8
Unscheduled re-admissions	761/624	2/0	1/3	20/52	16/131
Unscheduled admissions	426/340	0/0	0/6	3/21	4/129
Unscheduled returns to intensive care unit	606/399	1/6	3/7	22/56	4/5
Unscheduled returns to operating room	777/582	4/25	0/1	17/47	15/131
Physical restraint	249/249	0/0	0/2	7/32	0/0
Documented falls	323/385	1/8	2/8	31/61	0/9
Unscheduled returns to emergency department	762/570	0/0	1/6	22/59	1/1
Patients leaving emergency department before treatment is complete	697/470	1/1	1/7	20/48	3/0

Source: the International Quality Indicator Project (IQIP).

**Table 3** The mean percentage of usage of safety indicators and all other indicators by country

<i>Country</i>	<i>Safety*</i>	<i>n</i>	<i>Mean percentage of usage (SD)</i>		<i>Difference (%)†</i>
			<i>1999</i>	<i>2002</i>	
USA	0	177	18.7 (19.3)	15.4 (15.5)	-3.3 <sup>†</sup>
Austria	0	50	24.6 (13.9)	19.6 (21.4)	-5.0
Belgium	0	76	33.3 (17.2)	33.6 (28.8)	0.3
UK	0	69	14.3 (16.1)	17.0 (33.6)	2.7
Taiwan	0	127	23.4 (15.5)	44.8 (22.5)	21.4 <sup>†</sup>
USA	1	72	30.0 (15.2)	24.8 (13.3)	-5.2 <sup>†</sup>
Austria	1	21	19.7 (10.6)	17.8 (18.2)	-2.0
Belgium	1	26	24.4 (9.7)	29.2 (17.7)	4.8
UK	1	36	13.4 (16.5)	14.0 (29.1)	0.6
Taiwan	1	69	26.1 (17.6)	52.2 (22.4)	26.0 <sup>†</sup>

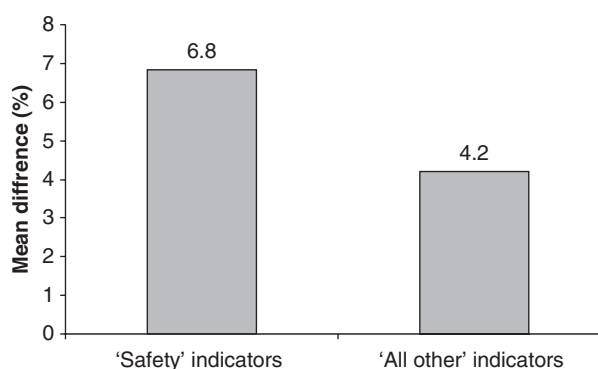
\*0 = 'all other' indicators; 1 = 'safety' indicators.

†Values are significant at the 0.05 level.

of hospitals in the USA, Europe, and Asia. To ascertain if the use of 'safety' indicators indeed differed from the use differences (between 1999 and 2002) of all other IQIP indicators, a separate analysis was conducted contrasting the means and their standard deviations, by country, between the 'safety' and 'all other' IQIP indicators (Table 3).

## Findings

There is a significant increase worldwide (5.0%) in hospitals' use of safety indicators as well as all other indicators between 1999 and 2002. A least square means of the difference between 2002 and 1999 shows that the average change was 6.8% for 'safety' indicators and 4.2% for 'all other' indicators (Fig. 1).



**Figure 1** Least square mean of differences (1999–2002) in percentage of uses for 'safety' and 'all other' indicators.

However, the difference between changes in the frequency of use of safety and changes in the frequency of use of all other indicators was not statistically significant.

A more detailed analysis shows a number of noteworthy patterns.

**1** Table 3 shows the average percentage (for 1999 and for 2002) of usage of safety indicators and all other indicators (referred to as 'non-safety') by country. It is worth noting that some countries did not have a significant increase in the use of either the safety indicators or all other indicators. While Belgium, the UK, and Taiwan saw increases in the use of IQIP indicators, Austria and the USA appear to be using these indicators less often in 2002 compared to their usage in 1999.

**2** Furthermore, when the country differences in the use of safety indicators are analysed, two countries (USA and Taiwan) deserve special attention. While the differences in the safety indicators-use means reached significance for the USA at the 5% level, the direction of change is important. The analysis in Table 3 suggests that, in the USA, participants may have used the safety indicators significantly less often in 2002 than they did in 1999. In Taiwan, the mean percentage increases in usage of both safety and all other indicators were 26.0% ( $P < 0.0001$ ) and 21.4% ( $P < 0.0001$ ), respectively. This makes Taiwan the only country among participants to achieve statistical significance increase in all indicator use between 1999 and 2002.

## Discussion

This paper uses existing IQIP databases from the USA, Asia, and Europe to explore possible connections between the use of indicators toward overall performance improvement and their selective use for safer practice profile identification. Rather than focusing on magnitudes of rates, this analysis focuses on changes in the frequency of use of indicators (from 1999 to 2002) considered proxies for safer practices. The variation in the frequency of use suggests that hospitals may be finding the IQIP indicators increasingly useful in tackling issues of safer practices and accountability about performance. It is possible that the frequency of use changes are directly tied, in some countries, to regulations and

laws governing quality improvement activities. However, this potential regulatory incentive does not negate the conclusion that the indicators are seen as helpful.

Two questions emerge from the analysis. First, can indicators of performance remain value-free when addressing issues of safer practices? Second, is the global interest in patient safety reflected in the increased use of performance indicators as proxies for 'safety' indicators? These questions are addressed next.

### Value-free indicators

To be used as value-free measures, indicators need to accommodate the expectations and goals of both providers and recipients of health care services rather than set their expectations and goals. The nature of these expectations is especially important during the measurement of safety. When it comes to 'adverse events' or even 'errors' (Anonymous 2003; Weingart & Iezzoni 2003), providers have always mentioned the probabilistic nature of the relationship between processes and outcomes, indicating that a certain number of adverse events are 'expected'. Interestingly, this is one of the main reasons why indicators such as 'unexpected returns' or variations on that theme exist – insinuating that, at least for providers, such events are 'expected'.

The issue of 'errors' is more complicated. Not only do errors occur (or have a likelihood to occur) because of environmental, organizational, individual, or the interaction of these factors (Hevia & Hobgood 2003; Zhan & Miller 2003), but an 'error' by definition is always preventable. Thus, from a definitional vantage point, when providers agree to label a practice pattern erroneous or even predisposed to errors, there is no room for the discussion of probabilities and expectations. In the best of worlds, there is an expectation of zero errors.

For the recipients of care, expectations play a larger role than goals. It could perhaps be said that the common goal is to have health, at the least restored, but also improved through enhanced quality of life. As for expectations, a painless, error-free, courteous episode of care is most anticipated. In many cases expectations are said to be the primary shapers of our evaluation of the quality of the care

(Kravitz 2001; Moran *et al.* 2003). If so, should indicators insinuating 'safety' be used for internal performance improvement or external accountability, that is, report cards, league tables? Is it possible to use the same measure as an indicator of both goals and expectations geared to the respective audiences discussed above?

This paper proposes that indicators should continue to be constructed without a value of goodness (or badness) associated with them. It is also recognized that when dealing with 'errors' de facto a value of badness is attached to it. Perhaps one way around this problem is to distance oneself from such connotations. Indeed, indicators of processes of care should take precedent over such outcomes as 'errors' or 'harm'. Without the understanding of process (through systematic monitoring of its various aspects), one cannot improve future outcomes. It is possible to define process without attaching a value of goodness (or badness) to them. Such measures are descriptive and capture key aspects of the production efficacy, effectiveness, efficiency, and appropriateness.

#### Indicator use frequency as a reflection of issue priority

This paper refers to a unique database of indicators used by hospitals worldwide. Among the observations made during trend analysis was the apparent increase in the use of 'safety' indicators after 2000, except in the USA where there are the greatest number of participants. As the public's awareness about mishaps and errors has been enhanced by the IOM 1999 report and various information media, health care providers felt a need to examine their processes that touch on patient safety in order to maintain accountability to the communities they serve.

It can be expected that as hospitals become better versed in the collection and interpretation of indicators, they will use more of them and often more complex ones (Gandjour *et al.* 2002; Sasichay-Akkadechanunt *et al.* 2003; Zhan & Miller 2003). However, the synchronized temporal pattern of increase in the type of indicators (related to safer practices) across two of the three continents may reflect other environmental realities. In addition to the worldwide attention to safety of care, there are

distinct accountability requirements that could favour the increase in the use rates of certain indicators. For example, 68% of the European participants in the IQIP during 2002 are represented by the UK hospitals. In fact, the first hospitals to join the IQIP were from the Northern Health Care Authority, and shortly after 57 National Health Service (NHS) Trusts were founded in 1991 (Thomson *et al.* 1997). Today, in addition to the IQIP, these hospitals have a number of requirements to address from the NHS Plan, published in July 2000. Among the functional aspects outlined in this Plan are changes in the responsibilities held by the Department of Health. Indeed, new structures called Strategic Health Authorities now report to the Department of Health on issues of performance and accountability, including 'securing management and accountability of the overall health and social care system' (Department of Health 2004; Taiwan Joint Commission on Hospital Accreditation 2004). The issues of safer practices and minimization of adverse events appear to be integral components of these goals.

The situation in Taiwan is not so different. Since 1999, the Taiwan Joint Commission on Hospital Accreditation has sponsored, supported, and recently recommended education and measurement strategies outlining appropriateness of practices based on existing evidence (Taiwan Joint Commission on Hospital Accreditation 2004). Prophylaxis and re-admissions have been priority focus areas in this process. Furthermore, the Taiwanese health care system has supplemented the approach with an organizational differentiation of hospitals (municipal, non-municipal) as well as the coexistence of parallel and complementary approaches to performance measurement and accreditation. Finally, the US hospitals and health care delivery organizations have seen the issue of accountability (via report cards, accreditation requirements) (JCAHO 2003; NCQA 2003), preceding the IOM report of 1999, hence establishing a base upon which much of today's multifaceted approaches on safer practices are founded (Weingart & Iezzoni 2003). Furthermore, there are numerous organizations (and associated strategies for measurement) proposing solutions to health care organizations' needs for improving the safety of their practices. Although beyond the scope of this paper, it would be interesting to explore the possible associa-

tion between the observed decrease in IQIP 'safety' indicator use in the USA and the participation of the US hospitals in multiple projects on safety. Indeed, since 1999, the focus of the American media and, in part, consequently, of hospitals has led to the US hospitals' participation in numerous initiatives, perhaps stretching their resources too thin (Homa-Lowry 2001; Morrissey 2003). Thus, it seems that a number of events around the globe have created a critical mass focusing attention on issues of safety in health care. The burgeoning number of health care safety organizations attests to this global phenomenon. It is proposed that although the observed trends in indicator use reflect a web of causation involving events common to many environments, the indicators ability to accommodate the local realities determines the trends' interpretation. Indeed, the generic indicators facilitate 'introspection' either at the organizational level (Furukawa *et al.* 2003; Murff *et al.* 2003) or at the departmental level by narrowly focusing on processes predisposing to adverse events that compromise the safety of care production.

## Conclusion

The objectives of this paper were to describe patterns of patient safety activities that may be reflected via the use of 'safety' indicators among participants in the largest indicator project worldwide, and to answer the question, 'Can performance indicators remain value-free?'

The descriptive statistics, analysis, and discussion in this paper provide the 'prologue' to an expected increase in inquiries regarding performance measurement, implications for safer practices, patient safety, and health care's accountability to various audiences. Perhaps the uniqueness of this study lies in its demonstration that performance indicators and existing methods for interpreting indicator-based performance profiles are immediately applicable and portable to more focused activities concerning safety.

While this exploratory analysis shows promising linkages and a continuum between existing indicator-based performance measurement methods and safety, we believe that this is the first step toward a new field of health services research. The implications of such research will perhaps have a more significant impact on the efforts of accountability to

patients, providers, and communities than many previous attempts.

## Acknowledgements

The authors thank Ms. Dana Bonistalli, Executive Assistant, CPS, for her assistance during the preparation of the manuscript.

## References

- Anonymous (2003) Medication safety issue brief. Series II, Part 4. Focusing on the human factor. *Hospitals & Health Network* **77** (9, Suppl. 2), page following 40.
- Department of Health (2004) *Shifting the Balance of Power*. Available at: <http://www.doh.gov.uk/shiftingthebalance/haconsultation/>
- Furukawa H., Bunko H., Tsuchiya F. & Miyamoto K. Voluntary medication error reporting program in a Japanese national University hospital. *Annals of Pharmacotherapy* **37** (11), 1716–1722.
- Gandjour A., Kleinschmit F., Littmann V. & Lauterbach K.W. (2002) An evidence-based evaluation of quality and efficiency indicators. *Quality Management in Health Care* **10** (4), 41–52.
- Hevia A. & Hobgood C. (2003) Medical error during residency: to tell or not to tell. *Annals of Emergency Medicine* **42** (4), 565–570.
- Homa-Lowry J. (2001) Measuring and benchmarking quality in hospitals. *Michigan Health Hospital* **37** (2), 12–13.
- JCAHO (2003) 2004 JCAHO National Patient Safety Goals approved. *Joint Commissions Perspectives* **23** (9), 1, 3.
- Kazandjian V.A. & Lied T.R. (1998) Cesarean section rates: effects of participation in a performance measurement project. *Joint Commission Journal on Quality Improvement* **24** (4), 187–196.
- Kazandjian V.A. & Lied T.R. (1999) *Healthcare Performance Measurement: Systems Design and Evaluation*. ASQ Quality Press, Milwaukee.
- Kazandjian V.A. (1991) Indicators of quality: pointer dogs in disguise. *Journal of the American Medical Record Association* **62** (9), 34–36.
- Kazandjian V.A. (1996) The contribution of epidemiology to CQI: a commentary. *International Journal of Quality in Health Care* **8** (4), 351–357.
- Kazandjian V.A. (2002) When you hear hoofs, think horses, not zebras: an evidence-based model of health-care accountability. *Journal of Evaluation in Clinical Practice* **8** (2), 205–213.
- Kazandjian V.A., Matthes N. & Wicker K.G. (2003) Are performance indicators generic? The international expe-

- rience of the Quality Indicator Project(R). *Journal of Evaluation in Clinical Practice* **9** (2), 265–276.
- Kazandjian V.A., Thomson R.G., Law W.R. & Waldron K. (1996) Do performance indicators make a difference? *Joint Commission Journal on Quality Improvement* **22** (7), 482–491.
- Kohn L.T., Corrigan J. & Donaldson M.S. (2000) *To Err Is Human: Building a Safer Health System*. National Academy Press, Washington, DC.
- Kravitz R.L. (2001) Measuring patients' expectations and requests. *Annals of Internal Medicine* **134** (9), 881–888.
- Mechtler R., Woschitz-Merkac M., Brock H. & Meusberger S. (2002) A global governmental objective: how Austria's healthcare system deals with accountability and performance improvement. In *Accountability Through Measurement: A Global Healthcare Imperative* (ed. V.A. Kazandjian), pp. 124–154. American Society for Quality, Milwaukee, WI.
- Moran M., Khan A., Sochart D.H. & Andrew G. (2003) Expect the best, prepare for the worst: surgeon and patient expectation of the outcome of primary total hip and knee replacement. *Annals of the Royal College of Surgeons of England* **85** (3), 204–206.
- Morrissey J. (2003) Quality vs. quantity. IOM report: hospitals must cut back workload and hours of nurses to maintain patient safety. *Modified Health Care* **33** (45), 8, 11.
- Murff H.J., Patel V.L., Hripcsak G. & Bates D.W. (2003) Detecting adverse events for patient safety research: a review of current methodologies. *Journal of Biomedical Informatics* **36** (1–2), 131–143.
- NCQA (2003) *Health Plan Report Card*. Available at: <http://hprc.ncqa.org/index.asp>
- Quaethoven P., DePaepe L. & Eeckloo K. (2002) Accountable care: the case of Flanders. In *Accountability Through Measurement: A Global Healthcare Imperative* (ed. V.A. Kazandjian), pp. 189–203. American Society for Quality, Milwaukee, WI.
- Sasichay-Akkadechanunt T., Scalzi C.C. & Jawad A.F. (2003) The relationship between nurse staffing and patient outcomes. *Journal of Nursing Administration* **33** (9), 478–485.
- Taiwan Joint Commission on Hospital Accreditation (2004) Available at: <http://www.tjcha.org.tw/english/english.htm>
- Thomson R.G., McElroy H. & Kazandjian V.A. (1997) Maryland Hospital Quality Indicator Project in the United Kingdom: an approach for promoting continuous quality improvement. *Quality in Health Care* **6** (1), 49–55.
- Weingart S.N. & Iezzoni L.I. (2003) Looking for medical injuries where the light is bright. *Journal of the American Medical Association* **290** (14), 1917–1919.
- Zhan C. & Miller M.R. (2003) Excess length of stay, charges, and mortality attributable to medical injuries during hospitalization. *Journal of the American Medical Association* **290** (14), 1868–1874.

## Sidebar

### The Quality Indicator Project® at a glance

The Quality Indicator Project® began in the USA in 1985 to assist hospitals in identifying opportunities for improvement in patient care. Initiated by the Maryland Hospital Association to help its member hospitals, the Project quickly gained popularity. It now includes over 1800 health care organizations worldwide.

Health care organizations outside of the USA have participated in the Quality Indicator Project® since 1991. As global interest in the Project increased, the Maryland Hospital Association decided in 1997 to create a separate initiative to focus on the needs of international participants. The International Quality Indicator Project (IQIP) offers health care organizations outside of the USA the ability to participate in

the Quality Indicator Project®, enhanced by the flexibility to customize the Project to meet their local requirements and independent needs.

Using the same rigorously defined clinical and administrative indicators with field-demonstrated validity as the Quality Indicator Project® (Kazandjian 1996; Thomson et al. 1997; Kazandjian & Lied 1998), the IQIP allows hospitals, psychiatric care (behavioural health) facilities, long-term care facilities, and home health care agencies to measure themselves against both their own performance over time as well as an aggregate database. The motivating factor behind the IQIP is not the data, but discovering the 'why' behind the data. To help health care organizations answer this question, the IQIP encompasses much more than data collection software and reports. The IQIP provides educational materials, conducts user groups and training sessions, shares case studies of other IQIP participants, and assists

in participants' benchmarking and networking activities.

Health care organizations join the IQIP through a sponsoring organization, or system, in their country or region. In some countries, the sponsoring system is hospital or university based (e.g. UK, Austria, Flanders, Portugal); in others, it is government sponsored (e.g. Taiwan and Singapore).

The IQIP offers four different sets of measures, called indicator sets. Each indicator set contains multiple measures focused on a different site of care: acute care (including hospital-based ambulatory care); psychiatric care (behavioural health); long-term care; and home health care. Participants choose

the indicator sets for which they would like to submit data. Using a web-based data submission and analysis software, data are entered monthly.

Each quarter, participants receive a standardized quarterly report that shows their hospital's performance over time for each selected measure, as well as how their hospital compares to the aggregate database (US and non-US). Through their sponsoring system, participants can request 'peer group comparison reports', which compare their organization to organizations with similar characteristics, such as geographic location, discharge volume, teaching status, and clinical services offered.