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EDITOR'S PICK

Measuring Return on Investment for Professional Development Activities

Literature Update and the Ongoing Challenge

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How do you articulate the value of professional development (PD) activities? In addition to reporting the number of learners, frequency of offerings, and unique courses offered, are you correlating education to outcomes (patient or employee)? Are you capturing the cost of implementing learning activities or initiatives to demonstrate the need for resources dedicated to PD? If you answered "no," then you are missing measurement of the economic impact of PD essential for resource decision-making.

Nursing professional development (NPD) practitioners are challenged by the question: "What is the return on investment for professional development activities?" This article is a follow-up of three articles published in 2016 and 2018 (Opperman et al., 2016a, 2016b, 2018). The focus of these articles was to describe how financial analysis of educational activities can drive decision-making. This included program evaluation models, summary of articles publishing economic impact and "how to" calculate financial impact, as well as the original and updated "Known Costs of Outcomes" table.

The premise of these articles was that resource allocation for creation and implementation of educational activities and initiatives are dependent on the reporting of costs and the monetary value of the resulting changes. NPD practitioners need to measure the impact of education interventions, report them within the organization, and publish the findings to advance the collective value of PD.

This is the first article of a two-part series that builds on the themes of the previously published articles by adding a review of the latest articles with an economic impact from educational interventions and the issuing of a challenge to NPD leaders. The challenge is to report outcomes and calculate financial impact in your organization related to education and then publish this for all NPD practitioners to benefit for their future program planning.

The second article in this series will review literature on the effects of the pandemic on nursing practice, patient outcomes, nurses' satisfaction, and turnover. From environmental scanning, the NPD practitioner recognizes these pandemic negative effects and seeks resources for programming to improve outcomes. Measuring the economic impact of educational activities related to these outcomes (i.e., Catheter Associated Blood Stream Infections and turnover) can be a means to advocating for resources for such programs. Finally, a 2022 update to the "Known Costs of Outcomes" table is provided.

UPDATE OF LITERATURE REVIEW

Using the same key words from the previous literature searches, the literature was examined from 2017 to 2021. Thirteen articles were identified that met the inclusion criteria of (a) identified an educational intervention for clinical professionals, (b) described the outcomes measured before and after the educational activity, and (c) provided a calculation for financial impact. Exclusions included patient educational activity, academic education, and medical residency programs. The 13 studies identified that met the criteria were composed of 9 with settings in the United States, 9 with nurses as learners, and 10 with interprofessional learners.

Appraisal of Evidence

The Johns Hopkins Nursing Evidence-Based Practice levels of evidence (LOE) were used to appraise the literature. See Table 1, which indicates the LOE as I through V and the quality as high, good, and low.

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TABLE 1 Summary of Literature From 2017 to 2022 With Professional Development Activity and Economic Impact Reported

Author LOE	Title	Primary Intervention	Measured Outcomes	Financial Impact Reported
Dotson et al. (2018) LOE = II Good quality	*Air medical simulation training: A retrospective review of cost and effectiveness*	Nurse/paramedic training with and without simulation High-fidelity flight simulator - *HealthNet Aeromedical Services Clinical Training/Safety Simulator*	Compared number of orientation flights needed to perform without supervision Calculated a reduction in cost of training. Years of experience, number of flights to crewmember independence on the job	Cost: Calculated by nurse/paramedic trainee hours during orientation flights multiplied by respective standard hourly rate in state of West Virginia
Gautreaux et al. (2019) LOE = V Good quality	*Customizing trauma nursing education to incorporate all departments: A cost-effective way to educate nurses from every trauma-associated unit*	Convenient trauma nursing education delivered internally Cost-effective way to educate every trauma-associated unit	Cost of providing internal trauma nurse course (TNC) compared to external TNC	Internal TNC was free of charge for employees and $60 for external nurses from community. Four internal courses with 141 attendees, savings of $86,715 compared to external nursing courses
Hiltunen et al. (2019) LOE = II Good quality	*Cost–effectiveness of digital wound care education in a healthcare organization*	Comparison of lecture (LE) vs. digital education (DE) and the combination of both formats	1) Number of professionals trained 2) Learning outcomes met *DE scores higher than without any DE *The longer the LE, the higher the scores *One-day LE with DE → best scores *DE alone, better than 1-day LE alone	Lecture education 7.5-hour course: Total 183.84€ 4-hour course: Total 101.4€ Digital education 3 modules :Total 55.19 € DE provided best cost–effectiveness
Jayawardena et al. (2021) LOE = V Good quality	*A low-cost educational intervention to reduce unplanned extubation in low-resourced pediatric intensive care units*	Multidisciplinary education, plus low-cost disposable materials Hands-on, online video modules (QR codes)	Patients with one or more unplanned extubations decreased from 29.4% to 17.3% post-intervention. Use of cuffed ETT increased: 12%–36%. 4. 3% decrease in pediatric mortality, from 26.7% to 22.4%	Cost of intervention materials was $1.32 per child. The ICER per mortality prevented is $30.7. The ICER per disability adjusted life year is $0.44.
Matthews & Jackson (2021) LOE = V Good quality	*Application of a return on investment analysis for public health training by case study*	Interdisciplinary Training for Certification in Infection Control	Reduced investigation hours by 10%–25% for outbreaks; payback >6 months; +ROIs for staff with retention <1 year	Initial investment (USD $1,840) Benefit–cost ratio (BCR = 1.41:1) Return of investment (ROI = 41%)
Milligan-Saville et al. (2017) LOE = I Good quality	*Workplace mental health training for managers and its effect on sick leave in employees: A cluster randomized controlled trial*	Clustered, randomized controlled design Manager mental health (MH) training (confidence and behavior dealing with staff MH matters)	Primary outcome: sickness and absence Significant effect on sickness absence using a range of statistical models	Total training cost = £625.55/manager Reduction of 6.45 hours per employee per 6 months Cost of work-related sickness absence = £6243.60 LESS per manager with training ROI of £9.98/ pound spent on manager training

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TABLE 1 Summary of Literature From 2017 to 2022 With Professional Development Activity and Economic Impact Reported, Continued

Author LOE	Title	Primary Intervention	Measured Outcomes	Financial Impact Reported
Moffatt-Bruce et al. (2017) LOE = V Good quality	*What is the return on investment for implementation of a crew resource management program at an academic medical center?* (republished from 2015)	Crew resource management (CRM)—system education/ training within hospital unit to improve quality and safety	Costs: training, program fixed costs, time away from work and leadership time; 3,000 employees trained, cost = $3.6 million Cost saving: reduction in avoidable adverse events and cost estimates from literature	Savings ranged from a conservative estimate of $12.6 million to as much as $28.0 million. Overall ROI for CRM training ranged from $9.1 to $24.4 million.
Parker et al. (2020) LOE = V Good quality	*Costs and effectiveness of a culturally tailored communication training program to increase cultural competence among multi-disciplinary care management teams*	Two-part culturally tailored trainings to improve cultural competence with multidisc care management teams	Cost–effectiveness calculated by multiplying resource units by unit costs Culturally competent behaviors (CCB) scores	Cost: Development ($1,044.8) Delivery ($4,709.21). Overall program costs = $5,754.19 Average program cost/participant = $138.51 ACER of $337.83 per 1-unit increase in CCB score
Silvestre et al. (2017) LOE = II High quality	*A multisite study on a new graduate registered nurse transition to practice program: Return on investment*	Multisite-comparison randomized controlled study Providing a structured TTP program for new graduates	Overall turnover rates Costs at hospitals with and without structured TTP program Calculation table with associated costs	Net cost saving was $735 per NGRN retained. Calculated net replacement cost savings was $11,173. Compared net replacement cost savings with total cost per NGRN to maintain the TTP program ($3,185), net cost savings of $7,988 per NGRN retained.
Simmons et al. (2017) LOE = I Good quality	*Training non nursing staff to assist with nutritional care delivery in nursing homes: A cost–effectiveness analysis*	Randomized controlled trial 8-hour training curriculum to nonnursing staff	Observation and weighed intake to measure: frequency of between-meal delivery, staff assistance time, resident caloric intake Significant effect on between-meal caloric intake ($F = 56.29$, $p < .001$), intervention group average of 163.33 cal/day > control	Intervention costs were $1.27/person per day higher than usual care/control group ($p < .001$). Incremental cost–effectiveness ratio (ICER) was 134 kcal/dollar. (Increase cost D/T higher frequency and number of snack items given/person per day and associated staff time to provide assistance)
Smailes et al. (2019) LOE = V Good quality	*An electronic medical record training conversion for onboarding inpatient nurses*	Transition of instructor-led training to electronic, self-paced learning for inpatient nurses	Measured newly hired nurses in inpatient Areas based on three goals: 1) efficiency, 2) effectiveness, and 3) satisfaction Used the Information Systems Success Model in proctored computer laboratory	ROI was $18,540—gained 593.25 hours in nursing time during a study period of 2 months. Used a midpoint of current pay range obtained from HR. Hours gained during 2017 were 5,022.5, with a cost savings of $156,935.

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TABLE 1 Summary of Literature From 2017 to 2022 With Professional Development Activity and Economic Impact Reported, Continued

Author LOE	Title	Primary Intervention	Measured Outcomes	Financial Impact Reported
Theilen et al. (2017) LOE = II Good quality	*Regular in-situ simulation training of paediatric medical emergency team leads to sustained improvements in hospital response to deteriorating patients, improved outcomes in intensive care and financial savings*	Prospective cohort study pMET (Pediatric Medical Emergency Team) weekly in situ, medium-fidelity, simulations with debriefing Training time protected, attendance rates of >95%	Time from deterioration to response Number of deteriorating patients requiring PICU admission reduced significantly Reduced severity of illness at PICU adm. Reduced average length of PICU stay (9.9/7.8/6.4 days). Reduce PICU deaths: 7/53 vs. 2/43 vs. 2/30	Total annual cost of training (£74,250) Savings from reduced PICU bed days = £801,600 per annum (334 PICU bed days * £2400). Coincided with significantly reduced hospital mortality ($p < .001$).
Van de Ven (2017) LOE = II Good quality	*Cost–effectiveness of simulation-based team training in obstetric emergencies (TOSTI study)*	One-day multiprofessional on-site team medical simulation training (TMST) -no team training -TMST without repeat -TMST with repeat at 6 months -TMST with repeat 3, 6, and 9 months	Multiprofessional training in medical simulation center is cost-effective when repetition training is performed on-site. Single training in medical simulation center was less effective and more costly compared to strategies that included repetition training on-site.	Mean costs of 1-day training = €25,546 ICER to prevent obstetric complication outcomes = €3432 for single-repetition training 6 months after 1st and €5115 for every 3 months of repetition trainings. Neonatal trauma due to shoulder dystocia, a three monthly repetition training on-site after the initial training had an ICER of €22,878.

Note. ICER = incremental cost–effectiveness ratio; ROI = return on investment; ACER = average cost–effectiveness ratio; TTP = transition to practice; NGRN = new graduate registered nurse; ETT = Endotracheal tube; PICU = Pediatric Intensive Care Unit.

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Dotson et al. (2018) completed a retrospective analysis on the cost for flight academy training with the addition of high-fidelity simulator curriculum compared to nonsimulation. They identified that the average cost of the control group was $7,740 per person compared to $3,855 with the simulation group. This was a cost savings of $3,884 per person.

Gautreaux et al. (2019) compared the training costs of providing trauma nursing education by examining internal versus external courses. The authors reported a significant cost savings for internal courses of $86,715.

Hiltunen et al. (2019) evaluated the cost–effectiveness of digital education for wound care as compared to traditional lecture education. The authors concluded that digital education was inexpensive and provided optimal learning outcomes along with a cost savings for both direct and indirect costs.

Jayawardena et al. (2021) provided multidisciplinary education plus low-cost disposable materials on preventing unplanned extubation in low-resourced pediatric intensive care units (PICU). Unplanned extubation and mortality decreased. The incremental cost–effectiveness ratio (ICER) per mortality prevented is $30.7, and the ICER per disability adjusted life year is $0.44.

Matthews and Jackson (2021) calculated the return on investment (ROI) for interdisciplinary training for Certification in Infection Control. The result was a reduction of investigation hours, a benefit–cost ratio of 1.41:1, and an ROI of 41%.

Milligan-Saville et al. (2017) completed a cluster randomized controlled trial to evaluate manager mental health training and its impact on employee sickness and absence in the workplace. Manager training led to a reduction in absences and resulted in a savings of £9.98 for each pound spent on such training.

Moffatt-Bruce et al. (2017) studied the financial implications of initiating a system-wide crew resource management training to improve quality and safety. Cost savings were based on the reduction of avoidable adverse events and estimated costs. With avoidance of 735 adverse events, the calculated savings ranged from $9.1 to $24.4 million, depending on the area measured.

Parker et al. (2020) implemented a two-part culturally tailored communication training program to improve cultural competence with multidisciplinary care management teams. Results indicate that the average program cost per participant was $138.51, with an average cost–effectiveness ratio of $337.83 per 1-unit increase.

Silvestre et al. (2017) completed a randomized comparison study on the provision of a transition-to-practice program for new graduate nurses. They measured the turnover rate cost at hospitals with and without structured programs. There was a net cost savings of $7,988 per each new graduate retained.

Simmons et al. (2017) completed a randomized controlled trial providing training for nonnursing staff. They observed methods used for feeding assistance in nutritionally at-risk nursing home residents. There was a $1.27 per person per day increased cost for staff time but resulted in a positive effect on residents' intake.

Smailes et al. (2019) focused on the conversion of an instructor-led training to electronic learning for nurse medical record education. They measured efficiency, effectiveness, and satisfaction. The savings was $18,540, with a gain of 593.25 hours in nursing time over a 2-month period.

Theilen et al. (2017) conducted a prospective cohort study and the impact of regular team training on staff responsiveness to deteriorating in-patient populations. The study found that it reduced the response time of staff, the number and severity of PICU admissions, the average length of stay, and PICU deaths. Although the total annual cost of training was £74,250, the savings in the reduced PICU bed days was an annual savings of £801,600.

Van de Ven et al. (2017) evaluated four simulation training strategies for their multiprofessional obstetric teams in a randomized controlled trial. Single-session training was less effective and costly compared to repetition training.

Creation of available workforce pipelines

Revenue savings and/or generation

Academic Partnerships

Increased competency to expand procedural cases

On-boarding programs for team members to support organizational enculturation

Prevent number of catastrophic outcomes (legal costs, death, extreme harm)

Avoid labor law cases/penalties caused by regulatory infractions

FIGURE 1. Examples on how nursing professional development can demonstrate value for services.

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The ICER for preventing a composite outcome of obstetric complications was €3432 for a single repetition of simulation versus €5115 for every 3-month repetition training course.

From these brief descriptions of the 13 articles reviewed, numerous lessons are learned: (a) Most NPD activities and initiatives contribute to outcomes (clinical or employee), (b) a variety of calculations can be used to show economic impact of programs, and (c) publishing educational interventions contributing to outcomes and the economic impact will provide other NPD practitioners evidence of advocating for resources.

NPD LEADERSHIP CHALLENGE

The problem for healthcare organizations is navigating exponentially challenging financial constraints. This creates an equally difficult course for NPD teams to provide services when they must compete for the organization's operational and investment dollars. To be successful, it is vital for NPD to articulate how the work of education links to the organizational goals. Linking education to outcomes and then articulating economic impacts is how the NPD practitioner channels dollars to education maintenance, expansion, and new growth.

Financial language resonates with executive leadership. Becoming savvy with this language and using these calculations connects how education contributes to meeting organizational goals. This is how to demonstrate that NPD activities and initiatives result in cost off-setting, in addition to achieving clinical knowledge and skills transferable to the point of care. To determine that the work of NPD is essential for the organization, succinct articulation of both qualitative and quantitative investment returns for developing the NPD team and providing services is vital.

The last aspect of this challenge is to publish how educational programs link to outcomes and the economic impact, so the rest of the NPD community can benefit from the collective shared knowledge (see Figure 1).

IMPLICATIONS FOR NPD PRACTICE

With the review of recent literature, the number of PD publications including economic impact has increased since 2016. In 2016, there were 11 articles for the previous 12 years, an average of 0.92 per year. In 2018, there were four articles in the previous 4 years, an average of 1.0 per year. In 2022, there were 13 articles in the recent 5 years, an average of 2.6 per year.

The PD community has made progress in calculating economic impacts of programming and publishing them (0.92/year to 2.6/year). However, using financial language to voice the impact of education when reporting work to decision makers within the organization and increasing the volume of publications on this critical topic is essential.

CONCLUSION

As demonstrated in this follow-up article, methods of evaluating the financial impact of educational offerings can be provided by several methods. The second article in this series will describe the effect the pandemic has had on patient and employee outcomes, with examples of how NPD activities can demonstrate their value in navigating the pandemic. It also will include an update of the "Known Costs for Outcomes" table.

In this dynamic healthcare environment, NPD practitioners must continue their vigilance in collaborating with leadership on measuring ROI. Even during a pandemic, proactively demonstrating the value of educational programs to the leaders at all levels in the organization is important. NPD practitioners must renew emphasis on consistent measuring, reporting, and publishing of the economic impact of activities in the healthcare environment.

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