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Should the surprise question be used as a prognostic tool for people with life-limiting illnesses?

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Abstract

The surprise question screening tool (“Would I be surprised if this person died within the next 12 months?”) was initially developed to identify possible palliative care needs. One controversial topic regarding the surprise question is whether it should be used as a prognostic tool (predicting survival) for patients with life-limiting illnesses. In this “Controversies in Palliative Care” article, three groups of expert clinicians independently answered this question. All experts provide an overview of current literature, practical advice, and opportunities for future research. All experts reported on the inconsistency of the prognostic capabilities of the surprise question. Two of the three expert groups felt that the surprise question should not be used as a prognostic tool due to these inconsistencies. The third expert group felt that the surprise question should be used as a prognostic tool, particularly for shorter time frames. The experts all highlighted that the original rationale for the surprise question was to trigger a further conversation about future treatment and a potential shift in the focus of the care, identifying patients who may benefit from specialist palliative care or advance care planning; however, many clinicians find this discussion a difficult one to initiate. The experts agreed that the benefit of the surprise question comes from its simplicity: a one-question tool that requires no specific information about the patient’s condition. More research is needed to better support the application of this tool in routine practice, particularly in non-cancer populations.

Editorial Comment: David Hui, MD, MSc, FAAHPM. Associate Editor.

In this "Controversies in Palliative Care Series" article, several experts reflected on the use of the surprise question to predict survival. They highlighted key literature that informed their clinical practice and future research.

Introduction

The surprise question screening tool ("Would I be surprised if this person died within the next 12 months?") was initially developed to identify possible palliative care needs. One controversial topic with the surprise question has been the adaption of it as a prognostic tool (predicting survival). The simplicity of the one-question tool and its ability to be applied to any patient group, has led many clinicians to favor its use in routine practice. For decades, research studies have reported the wide variation in the performance of the surprise question as a predictor of survival. Because of this, some clinicians do not feel there is a prognostic benefit to the tool and advocate for it to be used only as a measure of need. In this "Controversies in Palliative Care" article, we invite thought leaders to provide a synopsis of the key studies that inform their thought processes, share practical advice on their clinical approach, and highlight the opportunities for future research.

Dr Christina Chu, MBChB MSc MRCP. Marie Curie Palliative Care Research Department, UCL. London. UK.

1. What are some key studies contributing to your interpretation of the literature?

Answer: The first consideration is 'how accurate is the surprise question'. Three systematic reviews have evaluated the ability of the surprise question to predict future death (1–3).

In a pooled analysis, where all disease types and time frames are considered, accuracy in terms of the ability of a clinician to correctly predict the survival outcome of a patient is 74.8% (95% CI 68.6–80.5) (2). This aligns with sensitivity and specificity results from the other reviews: sensitivity (proportion of patients correctly identified as dying) 67.0% (95% CI 55.7–76.7) (1) and 71.4% (95% CI 66.3–76.4) (3); specificity (proportion of patients correctly identified as surviving) 74.0% (95% CI 69.3–78.6) (3) and 80.2% (95% CI 73.3–85.6) (1). It remains unclear whether using the surprise question alone performs better or worse than clinicians making their own predictions from their clinical experience and judgement.

The negative predictive value (NPV) consistently demonstrates the ability of the surprise question to identify patients who are unlikely to die in the predicted time frame when the clinician has predicted survival, with a pooled NPV of 93.1% (95% CI 91.0–94.8) (1). Most studies use a time frame of 6 or 12 months. It continues to perform well when the background mortality rate of the population changes. NPV is 98.0% (95% CI 97.7–98.3) for a mortality rate of 5% and 88.6% (95% CI 87.1–90.0) for a mortality rate of 25% (3).

The second consideration surrounds the patient population the surprise question is being used for. All the reviews consistently show that the surprise question performs better when used with cancer patients compared to unselected groups of patients, for example those in emergency departments or primary care, or patients with other primary non-cancer diagnosis such as organ-failure.

Lastly, it is interesting to explore what a yes or no answer to the surprise question actually means for clinicians. There is limited evidence to understand this phenomenon (4). Results suggests when general practitioners answer “no, I would not be surprised if a patient died within the next year” they perceive the probability of survival to be less or equal to 50%. The study also raises issues surrounding the reliability of the surprise question, because the majority (54.6%) of surveyed general practitioners (n=250) applied the surprise question inconsistently between different patient cases and there was also variability between different practitioners.

2. How do you approach this question in clinical practice?

Answer: The value of the surprise question comes from its high NPV (identifying patients who are unlikely to die in a certain time frame), similar to how the D-dimer blood test is considered useful to exclude thrombosis in low-risk patients. Using the surprise question in this manner aligns with its rationale for development: to prompt professionals to consider whether a shift in focus of care is needed. Since the surprise question was not developed to be a prognostic tool, expecting it to perform well in this arena is unrealistic and using it in this manner could be considered unwise.

Within the field of specialist palliative care, and some others such as oncology, prognostication usually forms a routine part of clinical practice. For clinicians who tend not to have a possible length of survival in the forefront of their minds, the surprise question can encourage this line of thinking. Alongside using the surprise question, it is important to provide the resources, training, and support to clinicians in taking the next steps, which may include making onward referrals to other services, assessing their holistic care needs, or holding conversations about their goals and wishes for future treatments and care.

3. *What are key future research directions to address this question?*

Answer: The accuracy of the surprise question has been well researched, and similar to other prognostic tools available, it is not a silver bullet. However, the desire remains to have a simple to use means of predicting prognosis with accuracy. Exploration of how the surprise question is being used by individual clinicians as well as across services is the first step in trying to understand how the surprise question can be used to enhance clinical practice and patient care.

Professor dr. Yvonne Engels. Radboud University Medical Center. The Netherlands.

1. *What are some key studies contributing to your interpretation of the literature?*

Answer: Two systematic reviews(1,2) show the prognostic value (varying but inaccurate if non-cancer), of the surprise question. It was not introduced to predict death, but to identify patients in need of palliative care. So, is the relatively low accuracy a problem? On closer inspection of the evidence, hardly any paper studying the surprise question reports on the moment when the surprise question is or should be asked. This finding is also observed in practice; in collaboration with physicians and nurses, there is very little structure to the application of the surprise question. An international vignette study (3) gives insights into the differences in answering the surprise question for different diseases and combinations of diseases. It also gives insights into the relationship between answering the surprise question and the estimated probability to die.

Veldhoven, a general practitioner and palliative care specialist, screened all patients registered with his practice who are over 75 of age using the surprise question, twice a year. Due to the high volume of the “No” group of the surprise question within this population (i.e., identification of people for whom the clinician would not be surprised if they died within 12 months), a second question was included. If the response to the surprise question is ‘no’, the clinician then asks themselves “would I be surprised if this person was still alive after one year?”. This is known as the double surprise question (DSQ). The DSQ further divided the initial “No” group in to two groups: one group that is in need of proactive monitoring (if you wouldn’t be surprised) and one group who should be offered palliative care (if you would be surprised). Research in to the DSQ suggests it can help to better distinguish and identify groups who need palliative care input.(4–7)

Comparative to other tools to identify palliative care patients (e.g., the Gold Standard Framework,(8) NECPAL,(9) the SPICT,(10) the RADPAC(11)), the surprise question is considered helpful. Such tools with many indicators are hardly used in daily practice as they are too time consuming as screening tool. My research group developed the Prolong tool to identify palliative care needs of patients with

advanced COPD.(12) Clinicians stated that they were not eager to implement the complete set of indicators, but that they had internalized the surprise question.

2. How do you approach this question in clinical practice?

Answer: The surprise question can help clinicians, particularly those who provide care to patients with one or more incurable, life limiting diseases and/or elderly patients (like GPs, professionals in oncology, cardiology, pulmonology, geriatrics etc) to identify people who would benefit from palliative care input or from advance care planning. The surprise question is a one-question screening tool that is quick to use.

The surprise question is recommended as a screening tool, which is applied to a certain population at regular times. Further instruction is needed about how to implement and interpret the surprise question, as it is not always understood in the correct way; in that it is often used as a prognostic measure rather than identifying palliative care need. Combining the surprise question with a second question (together the double SQ) to divide the population in those who are urgently in need of palliative care and those who need monitoring, seems promising.

3. What are key future research directions to address this question?

Answer: Further research of the double surprise question within a primary care setting is needed, to understand the impact on prognostic accuracy.

More research is needed to relate the surprise question to palliative care needs, palliative care provision and what follow up action is taken because of the response to the surprise question.

Just applying the surprise question is not enough to make clinicians start proactive care, and particularly to start communication about such sensitive topics with their patients. Many clinicians consider this difficult to do in practice. Training with actors who simulate patients appeared very helpful. (13)

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1. *What are some key studies contributing to your interpretation of the literature?*

Answer: Initially, the surprise question has been developed to screen for entrance of palliative care using 1-year time frame.(14) White *et al.* reported that the surprise question showed approximately 75% of pooled accuracy level, across time frames.(2) It is similar to the value of c-index (area under the curve) in the meta-analysis of Downar *et al's*, at 0.81.(1) Another recent meta-analysis with sound methodology confirmed that test characteristics for the surprise question were reasonable across timeframes and health care professionals.(15) Those studies consistently indicated that the surprise question is an acceptable screening tool for advance care planning. Merits of the meta-analyses were large number of populations, and clinicians' specialties were compared. Meanwhile, it had limitations of the heterogeneity of performance (i.e., sensitivity and specificity) of the surprise question, patient populations and clinicians' knowledge and experiences. The timeframes were confined to 6 to 12 months mostly. 6-12 months may be too long to handle clinical decisions for patients with far advanced cancer.(16) Further research has applied the surprise question to different timeframes. A Japanese study reported that the surprise question was useful as a screening tool for 1-week and 1-month survival prediction in palliative care units.(17)

Another point to solve is that accuracy of surprise question has not been compared with other prognostic tools. Clinicians' prediction of survival is the most widely used tool for prognostication. Temporal responses (giving a numerical estimate of survival, e.g., 25 days) are the most common type of clinician prediction, however, formulating this can be challenging in terms of formulating a specific duration. The surprise question acts as a counter-question to clinicians' prediction; thus, it is simple to use. Compared to temporal responses, the surprise question has similar prognostic capability.(18)

2. *How do you approach this question in clinical practice?*

Answer: It is recommended to use the 1-year, 6-month and 6-week surprise question as a screening tool for initiating advance care planning.(18) Recently, shorter timeframes of the surprise question were validated. Namely, the 3-day and 1-day surprise question were reported as useful screening tools for impending death of patients with advanced cancer. (19,20) Empirically, the surprise question within a few days were helpful in Korean medical environment also. Because a private room to prepare imminent death (for three nights and four days) is covered by the national health insurance in PCUs in the Republic of Korea. However, the resource is limited as there is only one room in most PCUs. There is no doubt that final days are critically important for dying patients and families. Thus, palliative clinicians ask themselves about 3-day surprise question or 1-week surprise question to prepare in advance. The surprise question is good to share prognostic information within palliative care teams. Doctors and nurses usually check their responses to the surprise question simultaneously and estimated survivals of patients can be crosschecked. The surprise question may be serially checked if any meaningful clinical changes occur. The feasibility and accuracy of the surprise question are advantageous in dynamic process of prognostication field.

3. What are key future research directions to address this question?

Answer: The surprise question draws on clinicians' intuitions by quick asking. Answers are simple, but the process would not be simple. Clinicians estimate survival by incorporating patients' performance status, laboratory results, and physical signs. The competencies of surprise question may differ according to patients' diseases, clinical experiences, and place of care, etc. Future research should define how those factors affect performance of the surprise question. It warrants further investigation to compare the surprise question with probabilistic questions, or well-validated prognostic models. (21–24) Serial assessment of the surprise question would provide additional information. Advanced technology will enable to develop calculating models including the surprise question for accurate prognostication. (25,26)

The bottom line

There was disagreement between the experts about whether the surprise question should be used as a prognostic tool for patients with life-limiting illnesses. Two experts felt that it should not be used as a prognostic tool as it was not the original purpose of the question. The third expert group felt that it should be used as a prognostic tool, particularly for shorter timeframes. All experts agreed that the underscored value of the surprise question, is from its ease of application: a simple one-question tool that requires no additional clinical indicator to use. The experts agreed that the surprise question is most appropriate as a screening tool to identify patients who may benefit from

specialist palliative care or advance care planning. More research is needed to better support the application of this tool in routine practice, particularly in non-cancer populations.

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References

1. Downar J, Goldman R, Pinto R, Englesakis M, Adhikari NKJ. The “surprise question” for predicting death in seriously ill patients: a systematic review and meta-analysis. *Can Med Assoc J.* 2017 Apr 3;189(13):E484–93.
2. White N, Kupeli N, Vickerstaff V, Stone P. How accurate is the ‘Surprise Question’ at identifying patients at the end of life? A systematic review and meta-analysis. *BMC Med.* 2017 Dec 2;15(1):139.
3. White N, Oostendorp LJ, Vickerstaff V, Gerlach C, Engels Y, Maessen M, et al. An online international comparison of palliative care identification in primary care using the Surprise Question. *Palliat Med.* 2022 Jan 1;36(1):142–51.
4. Weijers F, Veldhoven C, Verhagen C, Vissers K, Engels Y. Adding a second surprise question triggers general practitioners to increase the thoroughness of palliative care planning: results of a pilot RCT with case vignettes. *BMC Palliat Care.* 2018 Dec 19;17(1):64.
5. Veldhoven CMM, Nutma N, de Graaf W, Schers H, Verhagen CAHHVM, Vissers KCP, et al. Screening with the double surprise question to predict deterioration and death: an explorative study. *BMC Palliat Care.* 2019 Dec 27;18(1):118.
6. Ermers DJ, Kuip EJ, Veldhoven C, Schers HJ, Perry M, Bronkhorst EM, et al. Timely identification of patients in need of palliative care using the Double Surprise Question: A prospective study on outpatients with cancer. *Palliat Med.* 2021 Mar 11;35(3):592–602.
7. Klok L, Engels Y, Veldhoven C, Rotar Pavlič D. Early identification of patients in need of palliative care in slovenian general practice. *Slovenian Journal of Public Health.* 2018 Apr 12;57(2):55–64.

8. Thomas K, Noble B. Improving the delivery of palliative care in general practice: an evaluation of the first phase of the Gold Standards Framework. *Palliat Med.* 2007 Jan 1;21(1):49–53.
9. Gómez-Batiste X, Martínez-Muñoz M, Blay C, Amblàs J, Vila L, Costa X, et al. Utility of the NECPAL CCOMS-ICO[®] tool and the Surprise Question as screening tools for early palliative care and to predict mortality in patients with advanced chronic conditions: A cohort study. *Palliat Med.* 2017 Sep 4;31(8):754–63.
10. Hight G, Crawford D, Murray SA, Boyd K. Development and evaluation of the Supportive and Palliative Care Indicators Tool (SPICT): a mixed-methods study. *BMJ Support Palliat Care.* 2014 Sep;4(3):285–90.
11. Thoosen B, Engels Y, van Rijswijk E, Verhagen S, van Weel C, Groot M, et al. Early identification of palliative care patients in general practice: development of RADboud indicators for Palliative Care Needs (RADPAC). *British Journal of General Practice.* 2012 Sep;62(602):e625–31.
12. Duenk R, Verhagen S, Bronkhorst E, Djamin R, Bosman G, Lammers E, et al. Development of the ProPal-COPD tool to identify patients with COPD for proactive palliative care. *Int J Chron Obstruct Pulmon Dis.* 2017 Jul;Volume 12:2121–8.
13. van Meurs J, Wichmann AB, van Mierlo P, van Dongen R, van de Geer J, Vissers K, et al. Identifying, exploring and integrating the spiritual dimension in proactive care planning: A mixed methods evaluation of a communication training intervention for multidisciplinary palliative care teams. *Palliat Med.* 2022 Dec 28;36(10):1493–503.
14. Moss AH, Lunney JR, Culp S, Auber M, Kurian S, Rogers J, et al. Prognostic Significance of the “Surprise” Question in Cancer Patients. *J Palliat Med.* 2010 Jul;13(7):837–40.
15. van Lummel EV, Ietswaard L, Zuithoff NP, Tjan DH, van Delden JJ. The utility of the surprise question: A useful tool for identifying patients nearing the last phase of life? A systematic review and meta-analysis. *Palliat Med.* 2022 Jul 29;36(7):1023–46.
16. Hui D. Prognostication of Survival in Patients with Advanced Cancer: Predicting the Unpredictable? *Cancer Control.* 2015 Oct;22(4):489–97.

17. Hamano J, Morita T, Inoue S, Ikenaga M, Matsumoto Y, Sekine R, et al. Surprise Questions for Survival Prediction in Patients With Advanced Cancer: A Multicenter Prospective Cohort Study. *Oncologist*. 2015 Jul 1;20(7):839–44.
18. Kim SH, Suh SY, Yoon SJ, Park J, Kim YJ, Kang B, et al. “The surprise questions” using variable time frames in hospitalized patients with advanced cancer. *Palliat Support Care*. 2022 Apr 17;20(2):221–5.
19. Ikari T, Hiratsuka Y, Yamaguchi T, Mori M, Uneno Y, Taniyama T, et al. Is the 1-day surprise question a useful screening tool for predicting prognosis in patients with advanced cancer?—a multicenter prospective observational study. *Ann Palliat Med*. 2021 Nov;10(11):11278–87.
20. Ikari T, Hiratsuka Y, Yamaguchi T, Maeda I, Mori M, Uneno Y, et al. “3-Day Surprise Question” to predict prognosis of advanced cancer patients with impending death: Multicenter prospective observational study. *Cancer Med*. 2021 Feb 21;10(3):1018–26.
21. Perez-Cruz PE, dos Santos R, Silva TB, Crovador CS, Nascimento MS de A, Hall S, et al. Longitudinal Temporal and Probabilistic Prediction of Survival in a Cohort of Patients With Advanced Cancer. *J Pain Symptom Manage*. 2014 Nov;48(5):875–82.
22. Morita T, Tsunoda J, Inoue S, Chihara S. The Palliative Prognostic Index: a scoring system for survival prediction of terminally ill cancer patients. *Supportive Care in Cancer*. 1999 Apr 7;7(3):128–33.
23. Pirovano M, Maltoni M, Nanni O, Marinari M, Indelli M, Zaninetta G, et al. A New Palliative Prognostic Score. *J Pain Symptom Manage*. 1999 Apr;17(4):231–9.
24. Yoon SJ, Suh SY, Lee YJ, Park J, Hwang S, Lee SS, et al. Prospective Validation of Objective Prognostic Score for Advanced Cancer Inpatients in South Korea: A Multicenter Study. *J Palliat Med*. 2017 Jan;20(1):65–8.
25. Hui D, Maxwell JP, Paiva CE. Dealing with prognostic uncertainty: the role of prognostic models and websites for patients with advanced cancer. *Curr Opin Support Palliat Care*. 2019 Dec;13(4):360–8.

26. Hui D, Paiva CE, del Fabbro EG, Steer C, Naberhuis J, van de Wetering M, et al. Prognostication in advanced cancer: update and directions for future research. *Supportive Care in Cancer*. 2019 Jun 13;27(6):1973–84.

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