The REMARK checklist

Item to be reported		Reported on Page Number/Line Number	Reported on Section/Paragraph
INTRODUCTION			
1	State the marker examined, the study objectives, and any pre-specified hypotheses.	5/159	Introduction/2
MATERIALS AND METHODS			
Patients			
2	Describe the characteristics (e.g., disease stage or co-morbidities) of the study patients, including their source and inclusion and exclusion criteria.	5/169	Patient population/1
3	Describe treatments received and how chosen (e.g., randomized or rule-based).	5/171 and 6/178	Patient population/1
Specimen characteristics			
4	Describe type of biological material used (including control samples) and methods of preservation and storage.	6/191	Sample processing/1
Assay methods			
5	Specify the assay method used and provide (or reference) a detailed protocol, including specific reagents or kits used, quality control procedures, reproducibility assessments, quantitation methods, and scoring and reporting protocols. Specify whether and how assays were performed blinded to the study endpoint.	6/195	Sample process/1
Study design			
6	State the method of case selection, including whether prospective or retrospective and whether stratification or matching (e.g., by stage of disease or age) was used. Specify the time period from which cases were taken, the end of the follow-up period, and the median follow-up time.	5/169 and 6/220	Methods/3 and Results/3
7	Precisely define all clinical endpoints examined.	7/210	Statistical analysis/1
8	List all candidate variables initially examined or considered for inclusion in models.	7/211	Statistical analysis/1
9	Give rationale for sample size; if the study was designed to detect a specified effect size, give the target power and effect size.	N/A - retrospective	N/A - retrospective
Statistical analysis methods			
10	Specify all statistical methods, including details of any variable selection procedures and other model-building issues, how model assumptions were verified, and how missing data were handled.	7/211	Statistical analysis/1
11	Clarify how marker values were handled in the analyses; if relevant, describe methods used for cutpoint determination.	7/2016	Statistical analysis/1

RESULTS			
Data			
12	Describe the flow of patients through the study, including the number of patients included in each stage of the analysis (a diagram may be helpful) and reasons for dropout. Specifically, both overall and for each subgroup extensively examined report the numbers of patients and the number of events.	N/A - retrospective	N/A - retrospective
13	Report distributions of basic demographic characteristics (at least age and sex), standard (disease-specific) prognostic variables, and tumor marker, including numbers of missing values.	7/221	Results/1
Analysis and presentation			
14	Show the relation of the marker to standard prognostic variables.	8/230	Results/3
15	Present univariable analyses showing the relation between the marker and outcome, with the estimated effect (e.g., hazard ratio and survival probability). Preferably provide similar analyses for all other variables being analyzed. For the effect of a tumor marker on a time-to-event outcome, a Kaplan-Meier plot is recommended.	8/230	Results/3
16	For key multivariable analyses, report estimated effects (e.g., hazard ratio) with confidence intervals for the marker and, at least for the final model, all other variables in the model.	N/A - no multivariable analysis	N/A - no multivariable analysis
17	Among reported results, provide estimated effects with confidence intervals from an analysis in which the marker and standard prognostic variables are included, regardless of their statistical significance.	8/230	Results/2 and 3
18	If done, report results of further investigations, such as checking assumptions, sensitivity analyses, and internal validation.	N/A- not performed	N/A- not performed
DISCUSSION			
19	Interpret the results in the context of the pre-specified hypotheses and other relevant studies; include a discussion of limitations of the study.	9/265	Discussion/2
20	Discuss implications for future research and clinical value.	11/312	Discussion/5

From: McShane LM, Altman DG, Sauerbrei W, Taube SE, Gion M, Clark GM: Reporting recommendations for tumor marker prognostic studies (REMARK). J Natl Cancer Inst 2005; 97: 1180-1184.

Article information: http://dx.doi.org/10.21037/apm-21-182
*As the checklist was provided upon initial submission, the page number/line number reported may be changed due to copyediting and may not be referable in the published version. In this case, the section/paragraph may be used as an alternative reference.