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This result is part of a program to understand the dividing line between uniform and nonuniform hyperbolicity. Uniform hyperbolicity leads to strong dynamical conclusions but when imposed on every point of a compact manifold, implies strong restrictions. Nonuniform hyperbolicity is much more flexible (nonuniformly hyperbolic systems exist on every compact manifold other than the circle). We show that the essential distinction is that in the latter case hyperbolicity is only assumed almost everywhere: A diffeomorphism for which every point of a compact manifold is hyperbolic (albeit a priori nonuniformly) is an Anosov diffeomorphism. This is a consequence of a general method that is amenable to yielding numerous other conclusions. (Received September 20, 2007)