of mathematical modelling in formu-
lating performance targets for tubercu-
losis (TB) control. Furthermore, they
appropriately highlight that such mod-
els serve as simplifications of a far more
complex reality, in which *M. tuberculosis*
is transmitted in heterogeneous fashion.
They mention two key factors – case
density and transmission saturation
– that contribute to such heteroge-
nity. However, there are many more,
including nosocomial transmission
clusters, strains of different fitness, social determinants of TB transmission
and complex interactions with the HIV
copandemic. Ultimately, no model
can account for all potentially relevant
aspects of TB transmission. Thus, we
need simple models capable of distill-
ing key components of transmission
dynamics into clear messages. However,
more complex models can be created
to try to show us where – and to what
degree – simple models may go wrong.
Models exploring case density and
transmission saturation could have an
important role to play in this regard,
and we welcome such efforts.

Ultimately, we must also remem-
ber that mathematical models are
but one component of a broader TB
research agenda that is sorely in need
of expansion. While refining our
models, we must not lose sight of the
fact that approaches over the past 20
years have failed to stem the tide of
ongoing TB transmission and that a
broad-based, concerted effort – in-
cluding an expanded research agenda,
relentless improvements in case detec-
tion and development of better tools
for TB diagnosis and treatment – will
be required to meet current goals for
TB control. Over the next 20 years,
the value of TB mathematical models
may be measured less by their ability
to accurately describe the dynamics of
TB transmission, and more by their
power to galvanize support and inform
appropriate policy.

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**Author reply**

Marais & van Helden provide an im-
portant historical context for the role
References


