Whole population integrated child health: moving beyond pathways

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WHAT DO WE MEAN BY 'INTEGRATION' OF CARE?

Integrated care pathways have been used over the last 20 years to deliver health services for many different conditions.[1 2] There is growing evidence that integrated care can positively impact on the quality of care;[3 4] policy makers and commissioners are increasing the funding available for integrated approaches.[5] Integration may take many different forms: vertical integration brings together elements of healthcare such as primary and secondary care services; horizontal integration brings together different agencies, for example, health and education and social care. It might also link services for physical and mental health. Children's healthcare additionally benefits from longitudinal integration, which aims to smooth transition across the life course.[6] Much recent debate has considered whether such connections need to be absolute, such as through the formation of joint ventures or takeovers; or whether they can be achieved virtually, through cooperative partnerships. On the whole, emphasis tends to remain on well-defined condition-specific pathways of integrated care and there are few initiatives concentrating on whole system integrative approaches.[7–10] Wolfe *et al*'s recent review gives a good analysis of these wider debates[11] and there is a strong argument in favour of integrated care for children and young people to move beyond pathways and take a whole population 'segmentation' approach.

USING SEGMENTATION TO MOVE BEYOND PATHWAYS

There are a number of initiatives in the USA that have begun to use segmentation models to deliver high-quality, cost-effective care to populations of patients. The 'Bridges to Health' model[12] was devised around 10 years ago to enable a rational customisation of healthcare around important and coherent segments of the population. It advocates an approach to stratifying risk in segments of the population and aims to go beyond the usual focus on diagnoses or provider types. The authors argue that 'in a healthcare system designed around the predictable needs of various populations, clinicians find it easier to respond to individual patients' needs and preferences'. It has been adopted and adapted by a number of US healthcare providers. Another important influence has been the work of Michael Porter and Thomas Lee, who describe a framework for primary care services designed around subgroups of patients with similar needs.[13] ChenMed[14] is a primary-care led model that was established in Miami and uses population segmentation to improve care for low-to-moderate income elderly patients. Of particular note is the preventative focus on the high-cost segment of the population with multiple comorbidities and complex health needs.

Segmentation models are beginning to be introduced in the UK. In 2010 the Department of Health developed a model that focused on the segmentation of the adult population of England based on behaviour, attitudes and lifestyles.[15] This looked at the key drivers of behaviour across six public health priority areas: smoking, obesity, alcohol, substance misuse, sexual health and mental health, as well as looking at physical activity. It offered insights into the needs, lifestyles and motivations of different individuals and groups within society. These insights shape social marketing and the work of public health practitioners and health policy makers. National Health Service (NHS) England used population segmentation alongside risk-stratification (the process of identifying the highest risk patients—those who consume a disproportionate share of the NHS budget) to support implementation of the 'Better Care Fund'.[16] They defined segmentation as 'grouping the local population by what kind of care they need as well as how often they might need it'. A significant part of the Better Care Fund guidance addressed the information governance constraints to implementing this stratification at a service level. Patient segmentation models were also used in the design and planning of the London Health Commission's work[17] to deliver better health for London. Children and young people featured in their whole population models, although there was no segmentation of the child and adolescent age group.

WHOLE POPULATION SEGMENTATION FOR CHILDREN AND YOUNG PEOPLE

While pathway-based care for children and young people has a role to play, it mostly ignores the vast majority of the childhood population who do not fulfil pathways' criteria.[5] The type, prevalence and severity of the illnesses experienced by children are very different from those in adults.[18] Condition-specific pathways in children are rarely efficient because of the extremely low incidence and prevalence of most severe paediatric diseases. Furthermore, unlike adults, a child's normal trajectory is characterised by developmental change. Finally, there is an expectation of care from parents, and inherent engagement with statutory local authority agencies via schools, that is fundamentally different from the care of adult patients.

Instead of focusing on disease-specific pathways that join up services horizontally or vertically, we advocate grouping the child population into 'segments' based on need. Connecting care for children, which is described as a case study below, is an example of an integrated child health system that has begun to do this.[19]

CASE STUDY: CONNECTING CARE FOR CHILDREN WHOLE POPULATION SEGMENTATION

Figure 1 illustrates how the child health population might be segmented when taking a needs-based perspective.

Description: in the first segment the healthy child accesses healthcare, social care and education; the main imperative for this group is prevention and a focus on physical and mental well-being. Prevention is a key component of a high-quality healthcare system.[5] The second segment represents a group of vulnerable children with predominantly social needs but where the connection to health is well understood.[18] The third segment groups together children and young people with a long-term condition. The fourth segment 'child with complex health needs' groups together children with health issues where they either present with a single long-term condition

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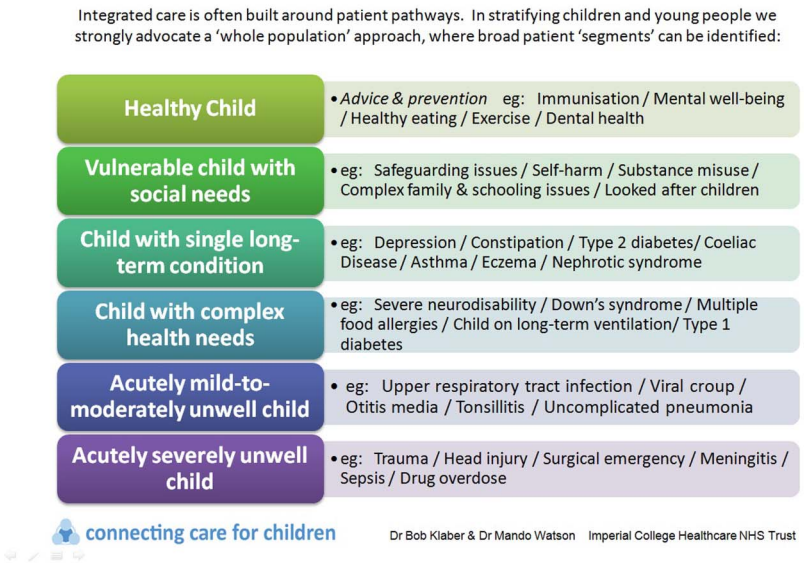

Figure 1 A whole population approach: patient segments in child health.

alongside social or mental health concerns or as a child with multiple complex conditions, for example, a child with neurodisability. The fifth and sixth segments comprise children who have short episodes of healthcare needs, either due to a mild illness, for example, tonsillitis or a severe event, for example, meningitis.

Design, testing and prototyping: this segmentation model was developed through a process of iterative expert consensus, initially beginning with paediatricians, and then through widening input from public health doctors, general practitioners, data analysts, health economists and service users. The previously referenced adult segmentation literature[12–17] also provided helpful principles. The focus throughout was to use a clinical perspective around patient-need to form the defining framework, as opposed to the more financial or 'risk-stratification' drivers adopted by other models. After prototyping the model, further refinements came from examples of individual patient pathways, from a small hospital dataset and using a randomised population of one of the connecting care for children child health general practitioner (GP) hubs in North West London.[19] This work demonstrated that the segments illustrated in figure 1 provided a robust framework for the whole GP-registered population of children, with minimal gaps or overlap.

Next steps: dividing the whole population into meaningful segments allows analysis of the paediatric element of the healthcare economy.[17] We believe that this analysis will identify pertinent issues affecting children and young people; will facilitate comparison and benchmarking between services and will drive commissioning and provision of care that is most likely to deliver outcomes that are truly patient-centred.

An illustration of this proposed analysis can be seen in figure 2, where five key stages of work are described.

Thinking about the utility of this model, we could start with a cohort of children and young people with complex health needs from within a geographical region or healthcare economy. The first stage is to explore the current state: where do these patients currently go to manage their health? Using coding, activity and finance data it is possible to quantify the historic usage of health services by this group of patients. Our testing has begun to do this. The second question to ask children, young people and their parents and carers: if they had a free choice, where would they go, and why? The majority of health services are still commissioned with strong reference to usage of healthcare in the preceding year, rather than the needs and outcome preferences of the population over a life course. Our approach begins to change that. The third stage is to map known quality indicators and outcome measures to the segment and to put in place mechanisms to actively monitor these. There is recognition that we need to move towards a more patient-centred outcomes-based commissioning approach,[20] and so developing these for the group with complex health needs is the fourth stage. The final stage is to use the previous four steps to guide high-quality outcomes-based commissioning. These five stages of work would need to be completed across each of the different population segments illustrated in figure 1.

Areas for discussion: through the prototyping and testing of this work we have identified a number of important areas for discussion.

Mental health services for children and young people are often poorly integrated and access is highly variable.[6] In this model, mental health permeates each of the segments and encourages commissioning to address effectively the mental health needs of the whole population. We

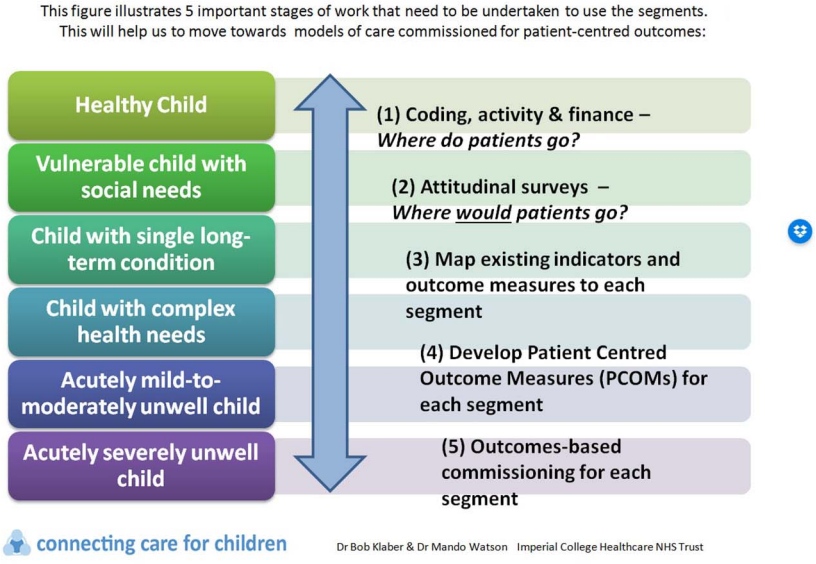

Figure 2 Using whole population segmentation in child health.

believe that this supports the important approach to parity of esteem.[21] Others argue that children with severe and enduring mental illness may additionally benefit from being grouped their own segment.[17]

Another area of debate is whether the two acute segments in figure 1 really are true segments, or whether they may be better illustrated as cross-cutting 'episodes' and 'events'. A data-driven analysis of a whole population of children and young people, as illustrated in figure 2, which focuses on healthcare needs and impact, may help to clarify this.

As highlighted in the Better Care Fund work[16] there are important information governance considerations to be made with this type of work. We have been able to manually link data between primary and secondary care, but as this work scales up it will need to become automated and encompass community, education and social care services. The quality of coding is also critical and is a vital area for future focus, while the frequent movement of populations, particularly within our cities, and the transition into adult services are important data factors that also need to be considered and accounted for.

COMMISSIONING AND CONTRACTING FOR INTEGRATED CARE

We believe that models such as the one described in the case study above can support commissioning by providing a framework for a structured implementation and evaluation of interventions for each of these groups of children. A conventional stratification approach with the low prevalence of most paediatric conditions would not be as effective in the childhood population. This whole population approach supports the needs of the largest group of children—healthy children—for whom advice, prevention and a focus on physical and mental well-being is the main requirement. By segmenting in this way, and applying it to populations where a network of providers are working together to deliver care, patient-level information can be grouped and analysed to plan, target and evaluate services that are likely to have the biggest impact.

It is possible, for example, to imagine such a model underpinning the case for 'year of life' funding in single long-term conditions, where the allocation is not restricted to one or two disease-specific pathways; or using a capitated model across the whole population, as in many of the 'Accountable Care Organisation (ACO)' models in the USA.[22] Some of these ACOs have begun to show improvements to the quality of care, and cost-efficiency, through a segmentation approach, with risk-stratification within a segment that allows clinicians to proactively target interventions.[23]

There is much urgent work needed to improve the care of children and young people in the UK.[24] As we recognise how poorly their healthcare needs have been met, understanding and evolving how we plan and deliver care for children and young people becomes a key priority. To adopt an approach for children that is overfocused on pathways is far from perfect. Segmentation, of the kind demonstrated in our example model, allows for better insight into the needs of children and young people, and provides a much clearer explanation of what can be achieved for them through integration. Crucially, it provides an approach, and language, through which providers of healthcare, commissioners, policy makers, researchers and other advocates for children and young people can work together to make the improvements that are needed.

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